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THE MUNICIPAL INDEX AND ATLAS, used in connection with the current advertisements in THE AMERICAN CITY, places local officials in the most favorable position to obtain all types of available equipment and supplies from manufacturers who desire to serve municipal government departments. THE MUNICIPAL INDEX AND ATLAS (750 pages) is published annually by the AMERICAN CITY MAGAZINE CORPORATION, 470 Fourth Avenue, New York 16, N. Y.

See pp. 21, 23, 25, 26, 28, 30, 149, 151, 153 for catalogs and publications on municipal and civic subjects

List of coming conventions on page 129. For Index to Advertisements see page 194.

BJ Submersible Pump

Why the motor at the bottom of the well?

The only basic improvement in deepwell turbine design . . . since Byron Jackson introduced the deepwell turbine pump in 1901.

SHAFTING LENGTH TROUBLES define the "borderline" beyond which the shaft-type deepwell turbine pump cannot be used successfully. That "borderline" is determined by length of shaft alignment.

THE SUBMERSIBLE IS DIFFERENT. Consisting of close-coupled deepwell turbine pump and electric motor, it operates deep down in the well... *entirely submerged in water* at *any* depth. With no long shaft or shaft-bearings to align, it operates equally well 50 feet down or 1500 feet down. Many are operating at depths from 900 to 1000 feet with amazing efficiency and unvarying dependability. And all because a successful means of sealing an electric motor for underwater operation was developed.

Get this new Submersible Bulletin. Write Dept. 306, Byron Jackson Co., P. O. Box 2017, Terminal Annex, Los Angeles 54, California.

Byron Jackson Co.

LOS ANGELES 54, CALIFORNIA

Offices in Principal Cities

Our Municipal Notebook

Extra Copies for Clipping and Filing

AT a recent municipal conference, some of the delegates were discussing the best system for filing articles and items currently published in THE AMERICAN CITY for future reference purposes. Out of this discussion the following ideas emerged:

In most sizable cities, three or more municipal departments subscribe to this magazine. During the month of publication, these copies might well remain uncut and be passed around among the various officials and department heads. When the next issue arrives, three copies of the preceding issue might be assembled by the chief filing clerk. One of these should be set aside uncut for binding at the end of the year with the annual index, which would go in the front of the volume, and meanwhile can be consulted by means of the monthly index to contents.

From the other two copies, the staples could be removed and the pages interspersed so that a complete set of all articles, items, and advertisements could be clipped for the various departments that might wish them for their subject files.

What if your municipality is a small one, and you are now subscribing to only one or two copies of THE AMERICAN CITY? The answer is easy: A special rate is quoted to municipalities on a club of five or more subscriptions.

Hospital or Health Center?

WITH the passage of the Federal-aid Hospital Survey and Construction Act of 1946, and the issuing of regulations to govern the construction of hospitals to be built with the $75,000,000 annual appropriation for the next five years, there is increasing interest throughout the country in the possibility of constructing community hospitals.

The act requires that municipal governments work through a state hospital agency to obtain federal aid. Most of the states are now making surveys of their hospital needs with the assistance of a $3,000,000 federal fund for this purpose. The amount of federal allocation for actual construction of the projects will be determined on a formula taking into consideration both the state's population and the average per capita wealth.

For projects that are approved, however, the federal government will supply roughly one-third of the cost of planning and construction. But before rushing ahead to apply for such funds, communities should realize that hospitals are expensive propositions to staff and maintain properly.

Figures of the American Hospital Association show that a population of from 8,000 to 10,000 is necessary to support a hospital containing twenty-five to thirty-five beds, the smallest economic size feasible. Moreover, a large hospital within an area is far more economical from the standpoint of the taxpayers and can provide a far greater number of special services than can a number of small ones. A population of 10,000 or more is considered necessary to provide sufficient cases to require the skill of a surgeon.

Four Basic Factors

A recent issue of the *Tennessee Local Public Works Planning Newsletter* points out that there are four basic considerations which should be carefully discussed before any community embarks upon the promotion of a hospital:

- Size of the community and the surrounding poulation
- Number of hospitals already available within reasonable distance
- Types of transportation available and condition of highways
- Physicians available in the community

Health Centers the Answer?

The *Newsletter* reports that health centers, or "semi-hospitals," may be the answer in cases where it appears likely that a hospital would be a community liability rather than an asset. Such health centers are also eligible for federal aid in the same manner as full-fledged hospitals. They would provide facilities for minor and emergency surgery, obstetrics, and the simpler general medical diseases, as well as laboratory facilities and income-producing office space for the physicians of the community.

Generally, the *Newsletter* states, the doctors are heartily in favor of such an arrangement, which provides them with facilities and trained personnel that they could not normally afford as individuals. Such centers might well serve as the nucleus for the construction of a hospital at a later date, while affording, in the meantime, better-planned medical service to the community than would otherwise be financially possible.

The Crisis in Education

IN ITS *News and Cues* bulletin of February 15, the Committee on Education of the Chamber of Commerce of the United States calls attention to the following statement approved by the Chamber's Board of Directors on January 24, 1947:

Education faces an acute crisis.

During the war years at least 350,000 teachers quit the profession, and of the remaining 850,000, more than 110,000 are unqualified on the basis of state standards for certification.

Costs of living have materially advanced, but teacher income has not kept pace and many teachers are faced with the necessity of either drawing upon their meager savings or seeking employment in other fields.

Sporadic teachers' strikes in several sections of the country are a warning symptom of this dangerous imbalance. . . .

Emphasizing the need for provision by states and communities of funds to overcome the shortage of teachers, the overcrowded classrooms, the obsolescence and lack of equipment, and inadequate maintenance of buildings, *News and Cues* adds:

Such immediate outlays of money can allay immediate needs and hold present-day teachers in the profession. Better salaries may even attract some veteran teachers back. Yet it will meet only in part our schools' key problem of better teachers and better school administrators.

The quality of our schools was only beginning to be adequate by 1940. Today the schools need even better-trained teachers, with greater social awareness of their responsibilities and greater competence to meet them.

Cannot lay groups help to inspire more able young people to select teaching as their profession? Good teachers cannot be conscripted. They must be recruited and

We've added 80,000

Telephone Girls

in the last year

We're working hard to give you more and better telephone service than ever before.

In the last year, we have added 54,000 telephone operators; also 26,000 service representatives, secretaries, clerks, stenographers, typists and manufacturing employees.

These are just the figures for women. We have also increased our employees by 70,000 men — most of them war veterans.

Yet in spite of record figures on employment, manufacturing and installations, we are greatly concerned that there are still more than 2,000,000 people waiting for telephone service and many who are not getting the kind of service they want.

We want you to know that we are doing our level best to catch up with every telephone need of everybody — everywhere.

BELL TELEPHONE SYSTEM

trained. They must want to teach, purposefully and skillfully.

How good are your teachers? What are their professional qualifications? Who selects them? On what bases? Do your children like school life? How many of them would like to teach or would even consider teaching as a life-work?

A survey to secure local answers to these questions might be a revealing and worthwhile project for a Committee on Education.

Streamlined Municipal Purchasing

SCIENTIFIC purchasing is a means of holding expenses at a minimum. Efficiently operated, it provides the manufacturer of industrial products with raw, semi-finished, and finished materials which enter into his products at prices which permit him to compete with others. It provides a means whereby the mileage of the tax dollar can be increased so that purchases for municipalities represent greater values in quality, quantity, and service.

The scope and responsibility of the purchasing function gives us a clue as to the factors which must be considered in efficient public purchasing. These factors are as follows:

(1) Adequate authority for the centralization of purchases must be provided. Then suitable rules and regulations are necessary, plus a system of forms to use in purchase negotiation.

(2) Facilities must be provided for the obtaining and developing of suitable specifications and for the proper inspection and testing (when necessary) of purchases made.

(3) The efficient purchasing agent must have data and judgment to determine the proper quality and quantity of articles to be purchased, what should be stored, and what should be delivered for immediate use.

(4) The purchasing department should have control of the transfer or sale of used equipment, scrap and salvage.

(5) He should have at his command sources of supply so that responsible concerns will be solicited for competitive bids.

(6) Salesmen should be handled with courtesy and should be considered an asset to the purchasing department.

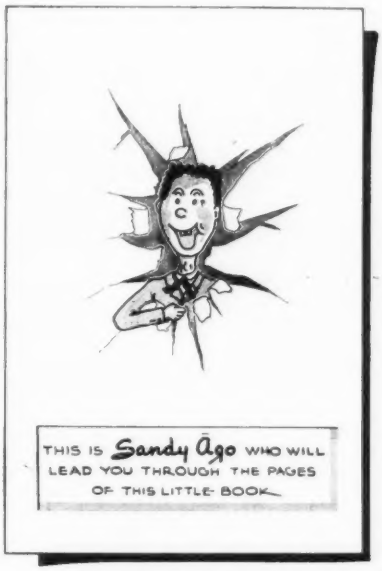
(7) The purchasing agent should obtain certain services, such as membership in the National Governmental Purchasing, which will give him information relating to markets and prices, including data needed to determine whether bids are reasonable, whether to buy ahead, whether to buy from hand to mouth or whether to stay out of the market entirely.

(8) The placing of orders for a municipality presents many legal aspects. It is necessary that the purchasing official shall have a good knowledge of contract law and procedures. He should realize the limit of his authority and appreciate the importance of referring legal questions to the duly authorized legal counsel of the city.

(9) He should be capable of having an adequate and suitable annual budget for his department and should be in a position, by reason of his knowledge of prices, to assist other departments in preparation of their budget requests.

From a recent address by Jos. W. Nicholson, City Purchasing Agent, city of Milwaukee, before the Purchasing Agents Association of New Orleans, Inc.

A Lively Annual Report



Frontispiece of the San Diego Yearbook

ONE of the most readable and skillfully prepared municipal reports that has come to our attention in a long time is that for the City of San Diego, Calif., dated 1945-46. This is colorful, attractive, and an excellent example of how a municipal report can hold a reader's attention and, at the same time, aid him in assimilating some knowledge of his city government's problems.

A semi-humorous, whimsical vein is cleverly used in describing the work and highlights of the San Diego departmental activities. Photographs, cartoons, and well-written captions help to enliven the personal style that is used. The report includes a page with facts of interest about the city; a letter of transmittal from the city manager briefly summarizing the total city situation; a section called "The Year at a Glance," which describes in a few paragraphs the major and spectacular activities of the city during the year, and a listing of city officials and boards and commissions. Figures and statistics are made meaningful by being compared and by being explained in the text of the report.

This San Diego publication is ample proof that city activities can be so described in a municipal report that they will make both enjoyable and informative reading for the average citizen.

For Higher Standards in Municipal Architecture

RECOGNIZING that well-designed municipal structures can contribute greatly towards the betterment of the city, and serve also as an inspiration for private developers, Mayor Edward J. Jeffries, Jr., of Detroit, has established a procedure for attaining this objective. This order assigns to the City Plan Commission the responsibility of reviewing and passing on the plans for all municipal buildings and structures from the standpoint of external appearance and visual effect.

In performing this duty [says the Mayor's Executive Order No. 50] the Commission will examine architectural design, exterior surface treatment, and arrangement and placement on site, as these aspects of proposed buildings and structures may affect appearance. The Commission will determine whether in its judgment such buildings and structures will be as pleasing and attractive in appearance as may be necessary and possible under the circumstances. Consideration shall be given to use and function, harmony and consistency with surrounding private development, both present and prospective, and the acceptability of the building or structure in its particular setting and location.

In carrying out this procedure, all municipal agencies shall file sufficient plans and specifications for the new buildings and structures and additions and exterior alterations thereto with the Commission for this review. The Commission is required to review these plans expeditiously and to report promptly to the originating department its approval or recommendations for changes and alterations in architectural design, exterior treatment, or placement on site.

Should any department be dissatisfied with the decision and requirements of the Commission in this connection, it will have the right of appeal to the Mayor's office.

A new monthly feature

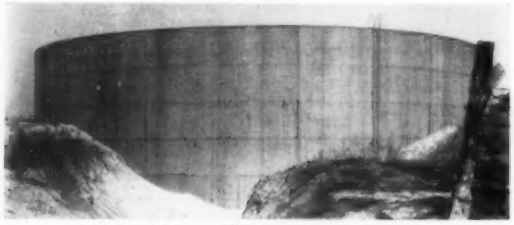
THE CITY TELLS ITS STORY

begins on page 83 of this issue

8,385,000 Gallons Of Distributed Storage Capacity In Gadsden Water System

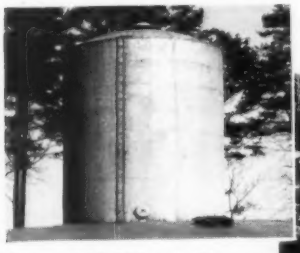
Ground-level storage capacity of 8,265,000 gals. and elevated storage capacity of 120,000 gals. is distributed throughout this system, which furnishes water to the 51,000 residents of Gadsden and the 1,500 population of Attalla, Ala.

THE structures providing this storage consist of two 3,000,000-gal. steel reservoirs, a 200,000-gal. steel reservoir, a 60,000-gal. Watersphere, a 60,000-gal. Horton ellipsoidal-bottom elevated tank, a 500,000-gal. reservoir, two 75,000-gal. reservoirs, a 165,000-gal. steel washwater tank, a 1,000,000-gal. clear well at the filter plant and a 1,000,000-gal. concrete reservoir at the Gadsden Army Air Force Supply Depot (250,000 gals. of which can feed back into the system).



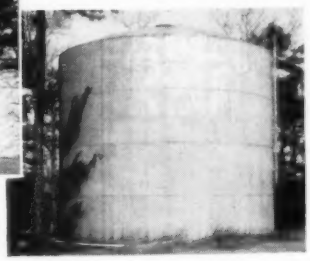
3,000,000-gal. Horton steel reservoir

The water supply for the Gadsden system is taken from the Coosa River. The main pumping station and a 9,000,000-gpd. filter plant are located on the north bank of the river in the east-central part of the city. At the main station, there are three low-lift pumps with a total capacity of 9,400 gpm. to pump water from the river to the filter plant. Four high service pumps of 13,400-gpm total capacity pump the filtered water into the distribution system. The high-lift pumps operate on a uniform schedule. A 2,100-gpm. pump is in service from 7 a.m. to 7 p.m. and all consumption in excess of 2,100 gals. is supplied from the reservoirs. From 7 p.m. to 7 a.m. a 3,500 or 5,000-gpm. pump is operated to supply the water consumed and to fill the reservoirs.



Above: 165,000-gal. Horton steel washwater tank.

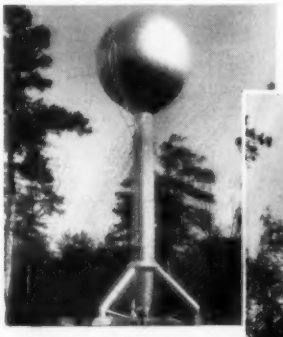
Below: 200,000-gal. Horton steel reservoir.



There are nine booster pumps with a total capacity of 1,720 gpm located at five booster stations to fill the reservoirs and elevated tanks. The 60,000-gal. Horton elevated tank provides gravity water pressure for an area of approximately 210 acres which has an elevation of 641 ft. above the main pumping station. The 60,000-gal. Watersphere, which is 60 ft. to bottom, furnishes gravity water pressure for a 190-acre area 549 ft. above the main pumping station.

There are a total of 12,465 services in the Gadsden water system, which serves an area of about 24 sq. mi. The average daily consumption for a three-year period was 5,619,000 gals., with a maximum and minimum consumption for the same period of 7,600,000 and 3,600,000 gpd. respectively. The distribution system consists of 104 mi. of distribution mains 2 to 8 in. in diam. and 26 mi. of 6 to 24 in. transmission mains. The welded steel reservoirs, the washwater tank, the ellipsoidal-bottom elevated tank and the Watersphere were fabricated in our shops and erected by our own field crews.

3,000,000-gal. Horton steel reservoir



Above: 60,000-gal. Watersphere

Below: 60,000-gal. Horton ellipsoidal-bottom elevated tank.

Waterworks engineers and city officials are invited to write our nearest office for quotations on Horton welded steel reservoirs and Horton elevated water storage tanks.

CHICAGO BRIDGE & IRON COMPANY

Birmingham 1.....1502 North Fiftieth St.
Houston 1.....5601 Clinton Dr.
Tulsa 3.....1625 Hunt Bldg.
New York 6.....3308—165 Broadway Bldg.
Cleveland 15.....2236 Guildhall Bldg.
Los Angeles 14.....1403 Wm. Fox Bldg.
Chicago 4.....2127 McCormick Bldg.
San Francisco 11....1233-22 Battery Street Bldg.
Philadelphia 3...1616-1700 Walnut Street Bldg
Atlanta 3.....2114 Healey Bldg
Havana .....402 Abreu Bldg
Detroit 26.....1501 Lafayette Bldg

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PENNSYLVANIA

Water Supply and Treatment

Underground leaks sometimes show themselves by melting surface snow.

Don't Let Water Revenue Leak Away

WHAT does unmetered water waste cost your city? Dewey Johnson, Assistant Engineer, The Cast Iron Pipe Research Assn., Chicago, Ill., says that there probably is no other branch of the water works field in which there is more room for improvement. Although a water department should sell at least 85%, of the water pumped, a check of communities near Chicago showed systems losing 53%, 80%, 23%, 65%, and 50% of their daily pumpage. He pointed this out before the Wisconsin Section of the American Water Works Association meeting held recently in Milwaukee. This water is lost either through leaks in the mains or through meters failing to register.

A useful combination of leak-finding methods for small towns, Mr. Johnson said, is the use of the Aquaphone for service leaks and sewer inspection for large leaks. Meter readers can be trained to conduct the inspection with the detector during their meter-reading work, if time does not allow this work to be done on a separate trip. Meter inspection, followed by checking on the fire hydrants and valves as they are passed along the route, will detect virtually all the leaks in the system.

The detector can detect small leaks on service pipe for a distance of 150 feet under ordinary residential conditions. It has difficulty in locating large leaks on heavy mains or leaks discharging into a submerged body of water. But its cost is low, averaging roughly $30 to $40 per thousand of population covered.

The next step is to inspect all the sewers. An inspection of the sewer will show whether an unusual amount of clear water is being discharged. If this is the case, further exploration will show the point of the leak. The sewer method is most effective at night when domestic use is at a minimum. Following the sewer survey, all points where water mains cross beneath railroad tracks should be investigated. River crossings also can be subjected to special attention. Leaks in partially developed subdivisions can be located by noting vegetable growth, particularly horseweed or other heavy water-consuming plants. In northern cities, leaks can be detected after the first light snow-fall by driving over the system and noting bare spots where the leaking service has emitted enough heat to melt the snow as it falls. These spots can be checked later with leak-detecting equipment. One superintendent uses the dew and frost method, arising early and noting where the dew or frost disappears from the pavement, thereby determining where to dig for a leak.

Employment of some national organization such as the Pitometer Company is recommended. Even though the servive seems expensive, the subsequent reduction in pumpage and increase in sales makes it economical in the long run.

Give particular attention to metering, Mr. Johnson urged. The number of small leaks throughout a household that will not register on old meters is surprising. Meters should be inspected regularly.

Some Definitions

YOU may find these definitions handy. We lifted them from Industrial Chemical Sales' *Taste and Odor Journal*, which in turn copied them out of *Chemical Industries*, which borrowed them from the *Wisconsin Engineer*. Farther back than this we have no record.

Chlorine—A dancer in a night club.

Carbon—A storage place for streetcars.

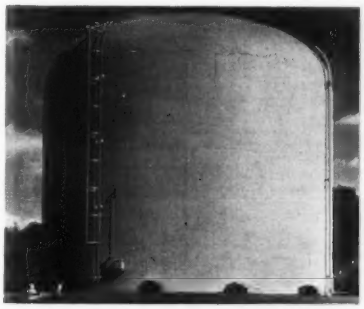
Barium—What you do to dead people.

Catalyst—A Western ranch owner.

Centimeter—A hundred-legged wormlike animal.

Flask—A measuring vessel, graduated in fingers, carried on the hip.

Nitrate—Special price on telephone calls and telegrams after dark.

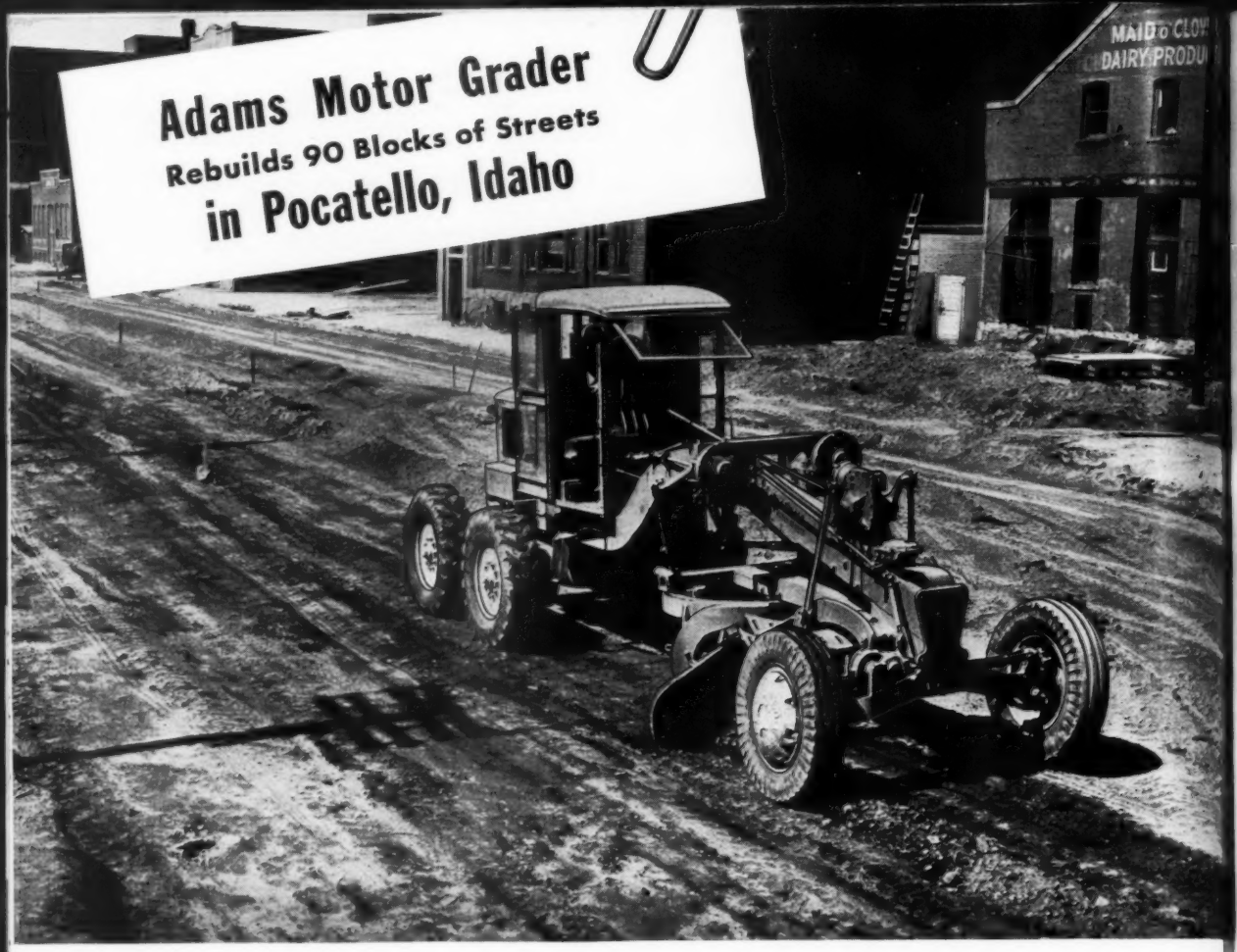


Ashland's new million-gallon, all-welded, Chicago Bridge and Iron standpipe.

A Million-Gallon Reserve

LEVELING off the peaks and smoothing out the valleys in water supply requirements for Ashland, Pa., is the chief function of the new million-gallon all-welded steel standpipe that this borough recently constructed. The new tank is 60 feet in diameter.

Ashland gets its water from a spring supply situated about five miles away. The water is collected in a 110-mg reservoir and is transferred by gravity through a 12-inch main to the borough. The new reservoir will be filled from the mains during off-peak periods. This reserve will be held until peak periods make demands greater than the 12-inch main can furnish. A booster pump augments the pressure produced by gravity if extreme conditions exist, and a low head in the large impounding reservoir reduces the flow. Borough Manager H. L. Burmeister states that it has not been necessary to use the pump, however, even though the region has recently gone through a bad drought.



New Streets – Faster, Easier

WITH ADAMS ON THE JOB

IN Pocatello, Idaho, Adams Motor Graders recently demonstrated what an important part they can play in any new street program. On a $500,000 widening and relaying project, involving 90 city blocks, Adams Graders were used for three important functions . . . for preparing the sub-grades—for laying the sand and gravel bases—for spreading the bituminous surface material.

This work called for both *precision* and *speed*. Adams' power-operated mechanical control system provided the precision, while Adams' 8 overlapping forward speeds assured exactly the right speed for completing every part of the work at the fastest practical rate.

Adams Motor Graders are perfectly adapted to a wide range of municipal uses—for building and maintaining unpaved streets and alleys—for backfilling over sewers, water mains, gas pipes, etc.—for grading jobs around playgrounds, parks, municipal centers, parking areas, etc.—for leveling municipal dumps, etc.

These are but a few of the countless good reasons why Adams Motor Graders are top favorites for municipal work the world over. Let your local dealer demonstrate why Adams Motor Graders are your best buy.

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Motor Graders

Elevating Graders

Leaning Wheel Grader

Breaking-up pavements, produced by bad drainage, cause many accidents yearly.

Poor Drainage—The Enemy of Good Streets

YOU can't blame the man behind the wheel for all the highway and street accidents. One of the direct causes of many accidents each year is incorrect subgrade drainage, the chief reason for the ragged pavement holes or depressions which every driver has encountered.

What causes these menaces that sometimes seem to happen overnight? During the past few years, heavily loaded trucks bearing essential wartime goods rolled along highways never designed to bear such burdens. This resulted in the failure and breaking-up of hundreds of miles of roads until they became a veritable network of cracks. And the cause of this break-up was insufficient drainage.

The "joint-pumping" of water and mud spouts following a rain is proof of this. Each time a spout of mud and water is forced up through a joint or crack it indicates that the subgrade, or base, on which the pavement is placed is saturated with water and reaching the point where the base will no longer be able to support the pavement surface.

Such a damaging condition is less likely to occur if the subgrade of the pavement is protected by a properly designed and installed drainage system. Vitrified clay pipe has been found to be an excellent solution to the problem.

Many municipalities are installing thousands of feet of clay pipe at the edges of existing highways and streets in an effort to forestall further failures. But until engineers, delayed by the war, can catch up with the development of modern transportation and can supply built-in drainage protection, there will continue to be unnecessary deaths and property destruction.

Two views of Columbus' jeep-propelled, trailer-mounted, soil-testing laboratory.

How "Optimum" Is Optimum Density?

UNFORTUNATELY we run across the statement now and again that would lead one to think "optimum density" is the densest condition that can be produced in a soil—that when one has reached it he has produced a condition resembling dense, impervious rock. It is worth while to remind ourselves that this is not the case.

Most of us use "optimum density" in connection with the almost classic and at least highly useful Proctor determination. This optimum density represents the densest condition that can be imposed on a certain soil mixture in a container of fixed size with a hammer of definite size applying a fixed number of blows of a uniform intensity, the mixture having a definite and controlled moisture content.

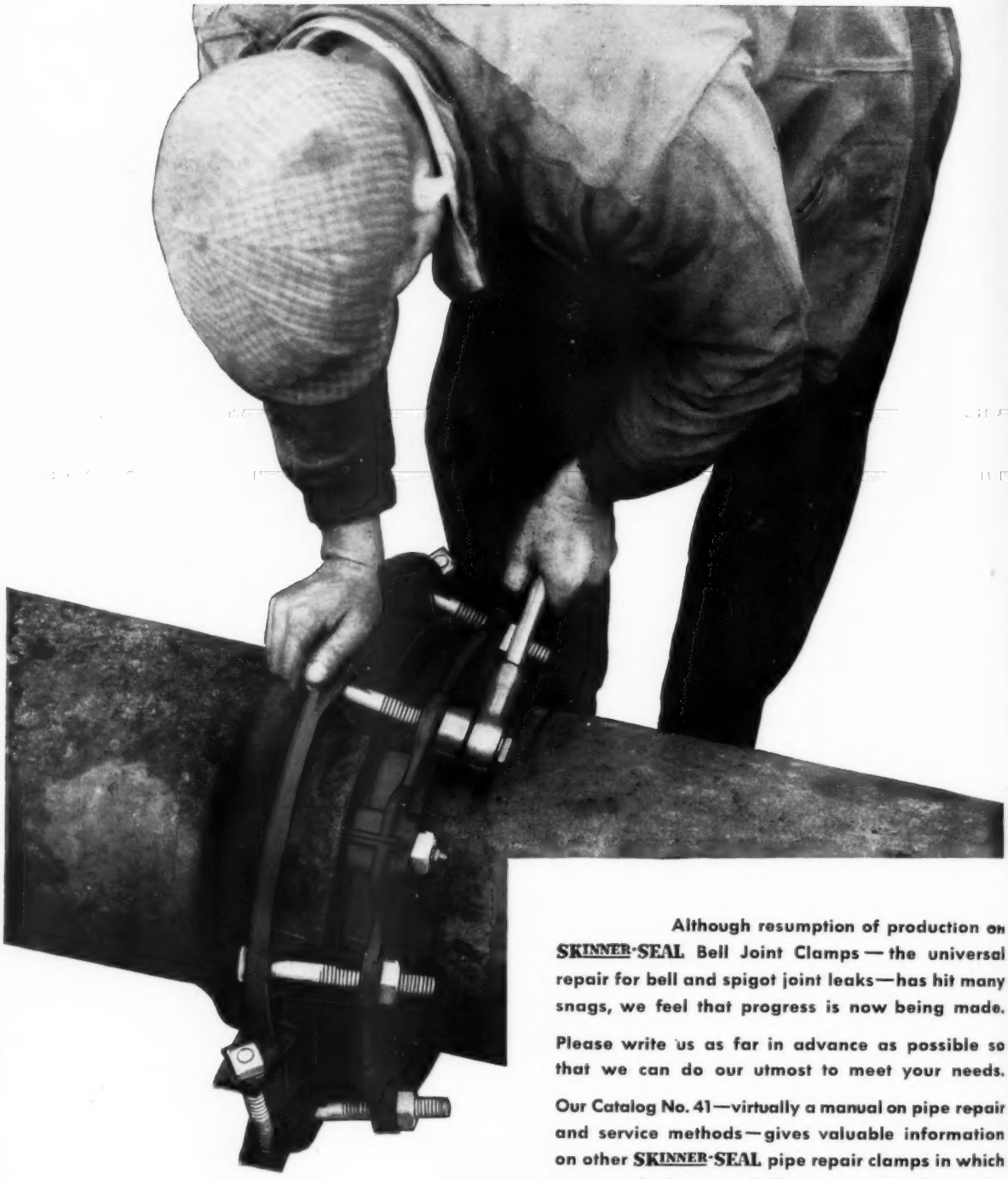
The engineers believe that this standard is one which will produce a base of uniform character strong enough to carry the traffic load. They use rolling equipment that does not correspond with the tamper used in the test. They rarely specify the length of time that it must be rolled, and generally find that they cannot obtain the specified density by using the "optimum moisture content" disclosed by the test. Generally they cannot obtain sufficient structural strength to their base until the moisture content has dropped somewhat below this figure.

A figure of maximum density under optimum moisture conditions as determined by the Proctor test is a useful tool, but it involves no black magic that will give miraculous results. It is not a measure of strength, nor of durability. It does give a convenient standard to measure rolling operations. Let us give it credit for what it is and for that alone.

Portable Soil-Testing Laboratory

THE soil-cement street improvement program in Columbus, Ga., gets close inspection control through the use of a portable testing laboratory. The laboratory is hauled from place to place on a trailer pulled by a city-owned jeep. The laboratory makes it possible to make on-the-job checks of soil sieve analysis, moisture content, density determinations at optimum moisture content, as well as many other tests.

The soil-cement program in Columbus is under the direction of J. M. Graddy, Director of Public Works.



Although resumption of production on **SKINNER-SEAL** Bell Joint Clamps — the universal repair for bell and spigot joint leaks—has hit many snags, we feel that progress is now being made.

Please write us as far in advance as possible so that we can do our utmost to meet your needs.

Our Catalog No. 41—virtually a manual on pipe repair and service methods—gives valuable information on other **SKINNER-SEAL** pipe repair clamps in which you may be interested. If your copy has been mislaid write us today.

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SKINNER-SEAL BELL JOINT CLAMP

Refuse Collection and Disposal

St. Petersburg, Fla., Gets New Fleet of Trucks

LINED UP back of those top-notch reasons for taking a Florida vacation this winter is a fleet of twelve new Elgin Refuse-Getters trucks put into service in June of last year in St. Petersburg. Painted sunshine yellow, St. Petersburg's official color, each unit consists of a Mack chassis on which is mounted the enclosed body. St. Petersburg reports that their greater capacity and the ease with which they can be loaded and unloaded has speeded collections, making it possible to release a part of the crew for other work.

St. Petersburg makes a combined collection of garbage and refuse twice a week in the residential areas and daily in the business districts. In addition, brush, tree trimmings, and other yard trash are collected at three-month intervals, although officials hope to increase this service to once each month now that new equipment is available. The disposal of garbage and refuse is by the sanitary fill method. Stanley Pinel, Director of Public Service, has charge of the work.

These girls do not constitute the collection crews in the St. Petersburg, Fla., refuse department. They only serve to show that St. Petersburg is as attractive as its refuse department is efficient.

Sanitary Fill in Front Yard

AS A PRACTICAL demonstration of absolute confidence in the sanitary fill and its ability to avoid nuisances permanently, the Drott Manufacturing Corporation, Milwaukee 12, Wis., recently landscaped its new office and factory building grounds with refuse from surrounding towns placed by the sanitary fill method. The company used the same machine that many cities are using for this work and has provided not only an economical and attractive landscaping of the frontal property but also furnishes a finished sanitary fill for prospective users to see when they call.

The new buildings are located at 4344 N. Green Bay Ave., Milwaukee.

A Drott Bullclam shovel building the sanitary fill on Drott's new property.

Garbage Collection Changes in Dayton

DAYTON, Ohio, has just inaugurated a new system of garbage routes and schedules proposed as the result of one of a number of studies being made for that city by Griffenhagen and Associates. The city had been collecting on routes which were established when city operations were on a forty-eight hour week. Early in 1946 the city reduced the normal working hours for all employes to a 40-hour week and closed the city hall on Saturday mornings. This resulted in overtime payments for garbage collection which had to be done on Saturday until the new routing was established.

It was possible in the new routing, without increasing the number of trucks, to collect all garbage in a five-day week, except in the downtown area, where there is one daily route. In accordance with the long-established practice in Dayton, garbage is collected only once a week. The new plan will result in an annual saving of about $15,000 in overtime payments.

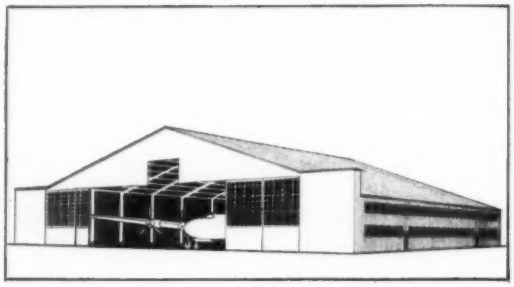
Under the old routing system, trucks were distributed all over the city every day. The new system provides for five districts. On a given day of the week all available trucks are assigned to one of the districts greatly facilitating supervision.

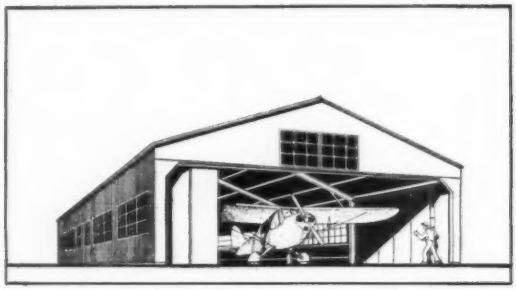
There are seventeen trucks in operation, of which two are standby, since there are only fifteen routes. Eleven of the trucks have Elgin 13-yard closed bodies, and the other six have Gar Wood bodies. Of the Gar Wood mechanical packers, one is a 9-yard body, three are 13-yard, and two are 18-yard.

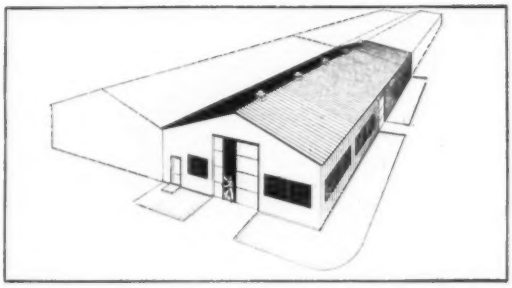
Griffenhagen & Associates who were consulted in this project, recommended the use of the same trucks and did not suggest an increase in equipment. However, they did have a schedule of replacements which initially would involve truck replacements; i.e., continuing to use the same bodies on a second chassis.

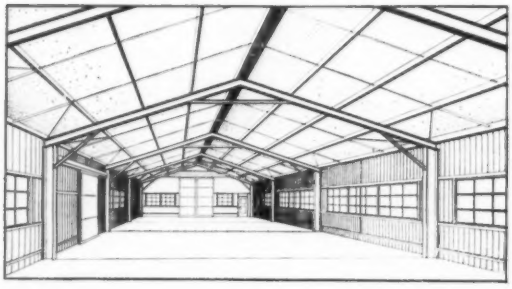
LURIA STANDARD BUILDINGS

FOR AIRPORTS AND INDUSTRY









MAINTENANCE AND STORAGE HANGARS

Luria Standard Hangars are available with clear door openings from 60 feet to 160 feet with contour clearances carefully chosen to accommodate all standard makes of planes. By allowing complete freedom of choice in length and in size and type of lean-to's, these Standard Units can be adapted to meet any combination of shop, storage and office requirements. All sizes of Luria Standard Hangars are designed in two weights — one to meet the load requirements of northern climates, and the other to effect the utmost economy for southern climates. Supplementing the Standard line, Luria is also prepared to design and furnish Hangars to meet any special requirements.

UTILITY HANGARS

Luria Utility Hangars are adapted from the Standard Industrial Building to provide a low cost, all purpose hangar for small planes. This building is particularly suitable for combination use requiring shop and storage space, offices and classrooms in one compact unit. Doors are precision built, pressed steel panels hinged together and hung on overhead track with self adjusting spring hangers. They are easily operated, rolling back inside building and providing a clear opening of 38'0" x 10'6".

INDUSTRIAL BUILDINGS

Luria offers a complete line of Standard Industrial Buildings varying in clear span widths from 40 feet to 100 feet with inside clearance at eaves ranging from 12 feet to 20 feet. All Luria Standard Buildings are permanent structures designed for maximum utility and flexibility. The unit system of expansion both in width and length combined with a choice in location of doors and sash provide unlimited variation in size and arrangement. These features allow a selection of combinations that are calculated to meet most individual requirements, thereby eliminating the expense of special engineering and gaining the benefit of production line economy. Simplicity of design featuring prefabricated frames of structural steel, insures easy handling and economical erection.

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Twenty Seconds from Alarm to Rolling Wheels

REDUCING the time element between the outbreak of a fire and the alarm is a first principle in saving lives and property from destruction. With rising losses, the need for modern fire alarms is imperative. In the Rochester, New York, *Municipal Journal*, Vincent Naylon of the Fire and Police Telegraph Bureau tells about one of these alarms.

To the general public, the system consists of hundreds of bright red alarm boxes, usually mounted on special iron standards painted red. Each of these boxes is numbered. To send in an alarm one breaks the small glass, opens the door by turning the key, and pulls down the lever.

At that instant, in fire-alarm headquarters, a light flashes on the fire board indicating which of the thirty-two circuits is bringing the alarm to headquarters. A small bell beats out the number of the box, and a register punches out the box number four times in code on paper tape. At the end of the first round the operator has set up the box number on a transmitter with keys similar to an adding machine. Connected with this transmitter is a visual indicator, on top and in the middle of the fire board, containing lamps which are lighted when the keys on the transmitter are depressed. This tells the operator whether the box has been set up properly.

At the end of the second round the operator presses the start key on the transmitter, and the box number is relayed four times to all firehouses simultaneously. A register on the desk in each firehouse receives this. Immediately, two rounds are sent out on what is termed "going circuits" and received in the fire houses on large gongs.

When the chief officer arrives at the fire, he may send out additional alarms if he deems it necessary. By means of a well-established code he sends into fire-alarm headquarters "3 twos". This registers in the fire alarm office on a small bell which rings "2-2-2." followed by the number of the box. This is recorded on the register, which punches the "three twos" in code and follows this with the box number. The operator then transmits this signal to all the firehouses in the same manner as the first alarm, with, of course, the "three twos" preceding the number of the box. Third, fourth, or fifth alarms may be sent in the same manner. Each one of these sends additional companies to the fire.

Howard Whitley at the telephone switchboard in the Rochester office, where a full assignment of fire companies can be dispatched twenty seconds after the first call of fire is received over one of the thirty-two circuits.

Each company to respond to the fire is reported "out" by the operator to all the companies remaining in quarters, by means of a multiple key-ringing device which enables the operator to talk to all the houses at one time.

The operator has a system of ringing on the switchboard by which the men in the firehouse can tell whether they are going to be sent to a fire, whether companies are being reported out or returning or whether merely an interdepartmental call is being received.

Fire Protection in Ocean City

By IRVIN JOHNSON
Fire Chief
Ocean City, N. J.

THE population of Ocean City, N. J., increases from 5,000 residents during the winter to 100,000 people living here during the summer. Buildings number over 7,000 units, well over half of them untenanted during the late fall and winter. This creates a hazardous situation because of delayed alarms.

Ocean City is on an island eight miles long by an average of three-quarters of a mile wide. Four bridges connect us with the mainland, two to Atlantic County and two to Cape May County. We have a cooperative agreement with the communities of both counties. The island, or city, is protected by a Gamewell fire alarm system with 102 boxes.

There are two fire stations. Headquarters in City Hall houses two 1,000-gpm Ahrens-Fox pumping engines bought in 1929, a 400-gpm pumping engine consisting of a Hale pump on a White chassis, and a hose wagon carrying floodlights. The second station houses a 1,000-gpm Ahrens-Fox bought in 1926 and a 75-foot mechanically raised Ahrens-Fox aerial ladder truck.

We shall soon receive two 500-gpm Peter Pirsch pumping engines ordered in August 1945. Our present apparatus carries eight Indian fire pumps.

All alarms are responded to by one engine company with two pieces of apparatus. A third alarm brings out all apparatus.

Water is supplied by eight artesian wells about 840 feet deep. Principal equipment at the main station consists

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IN 1946, HERE'S HOW CITIES ORDERED FOR STREET USE AND PARKING LOTS

1P only	— 12 Min. for 1 Penny	689
1P only	— 24 Min. for only 1 Penny	30
2P only	— 12 Min. for each Penny	236
1P-1N	— 24 Min. for each Penny; 2 Hours for 1 Nickel	191
2P-1N	— 24 Min. total for 2 Pennies; 1 Hour for 1 Nickel	80
2P-2N	— 24 Min. total for 2 Pennies; 2 Hours for each Nickel	928
3P only	— 36 Min. total for 3 Pennies	184
3P-1N	— 36 Min. total for 3 Pennies; 1 Hour for 1 Nickel	374
5P-1N	— 60 Min. total for 5 Pennies or 1 Nickel	**10,245**
5P-2N	— 60 Min. total for 5 Pennies; 2 Hours for 2 Nickels	252
10P-2N	— 120 Min. total for 10 Pennies; 2 Hours for 2 Nickels	**44,518**
15P-3N	— 180 Min. total for 15 Pennies; 3 Hours for 3 Nickels	1,580
1-Nickel	— 1 Hour for 1 Nickel	110
1-Nickel	— 2 Hours for 1 Nickel	260
2-Nickel	— 1 Hour for each Nickel; 2 Hours for 2 Nickels	290
3-Nickel	— 1 Hour for each Nickel; 3 Hours for 3 Nickels	237
5N-1Q	— 1 Hour for each Nickel; 5 Hours for 1 Quarter	208
6-Nickel	— 90 Min. for each Nickel; 9 Hours for 6 Nickels	700

Any MILLER METER installation, no matter how old, can be modernized at small cost to any rate-time combination needed. Write our Service Dep't. today.

835 NO. WOOD STREET **DUNCAN METER CORP.** CHICAGO 22, ILL.

of a 1-mgd and two 1½-mgd De Laval electric-driven pumps, a 3-mgd steam-driven standby, and a 1,050-cubic-foot Ingersoll-Rand air compressor for lift. There are five auxiliary pumping stations equipped with Byron Jackson, Worthington, and Peerless deep-well pumps.

Distribution System

The distribution system consists of two 125-foot standpipes of 188,000 and 459,000 gallons capacity. The 4- to 16-inch mains serve 540 hydrants which have green caps for 1,000-gallon capacity, orange for 1,000-500 gallons, and red for under 500 gallons. Pressure in the mains averages around 48 pounds.

Personnel comprises a chief, two deputy chief engineers, six captains, and thirty-four men. We work a seventy-two-hour week, twenty-four hours on and twenty-four hours off. We have recently instituted much closer inspections of all rooming houses and hotels of four stories or more.

Let Hose Makers Submit Own Specifications

WE have been asked hundreds of times to draw up specifications for fire hose that would permit the purchasing agents to select the best hose obtainable for his fire department on a competitive price basis, and we have not yet found the answer.

In drawing up specifications for fire hose so that all companies can bid on an equal basis, it is necessary to throw out the window all improvements developed by respective rubber companies over years of time that would increase the life of hose and meet the modern methods employed by the firemen in fighting fires. No specifications could be drawn that could include any improvement that is confined to one company, as it would eliminate other companies from bidding. Invariably, the result is a set of specifications dealing solely with physical and chemical tests covering the cotton jacket and rubber lining. The manufacturers then are asked to compete with each other to see who can make the cheapest hose and still meet the specifications, as the city must purchase from the low bidder, providing the bid meets with the requirements. Asking the companies to compete with each other to see who can make the cheapest hose is, we believe, a mistake.

In the fire hose, we claim the best should be purchased, if only for the protection of the men handling it. Buying hose on a competitive price basis, we believe, is not conducive to the best results either from a safety or an economical standpoint.

When purchasing fire hose, we would suggest that the city permit the manufacturers to submit their own specifications together with other specifications, if the city so wishes, and then permit the city to purchase what, in its opinion, is to the best interest of the fire department.

ROBERT D. BAIRD, *President,*
Bi-Lateral Fire Hose Company,
20 *N. Wacker Drive, Chicago, Ill.*

Police Radio Improved By New High Frequency Channels

By ROBERT A. MITCHELL
Chief, Bureau of Traffic Engineering
Department of Public Safety
Philadelphia, Pa.

NOT too many years ago one-way AM police receivers were the talk of the town. Then came the first talk-back systems on medium frequency, followed quickly by 30-40 mc AM two-way system — and police radio had really arrived. The industry took a new lease on life when the first 30-40 mc FM systems went into operation in 1940 and quickly established a new high in dependable two-way communication, with much more dependable coverage per dollar invested than had been possible before.

Along came the war, with tremendous technological progress in radio communication and all associated problems. As a result, vast new opportunities are open to those interested in forging ahead.

The 30-40 mc band has been expanded to include 42-44 mc to provide more channels and a better pattern of frequency allocation to those who would use this service. The same basic classes of users may also now operate in the 72-76 mc band for communication between fixed points and mobile units. Many new channels in the 152-162 mc band offer still greater opportunities to install more systems and more mobile units per system. It now appears that, under the recently proposed frequency-allocation plan, a majority of municipal police radios will eventually be in this 152-162 mc band, with substantial improvement in coverage within high "noise level" areas and their congestion of steel structures. And so it is that the designing and manufacturing industry has buckled down to the big task and the fine opportunity that the police industry is ever ready to lay at its doorstep.

We believe there is still another big pioneering job ahead, a job which, unless done, still leaves an unsolved problem in our radio communication picture. We refer to developments of the still higher frequencies, now known as micro-wave frequencies.

The supplying of equipment for operation in the higher frequencies is an immediate problem, since an increasing number of operators of large-area police communication systems regard it as the ideal means of controlling remotely located transmitters. Our basic objectives are listed as follows:

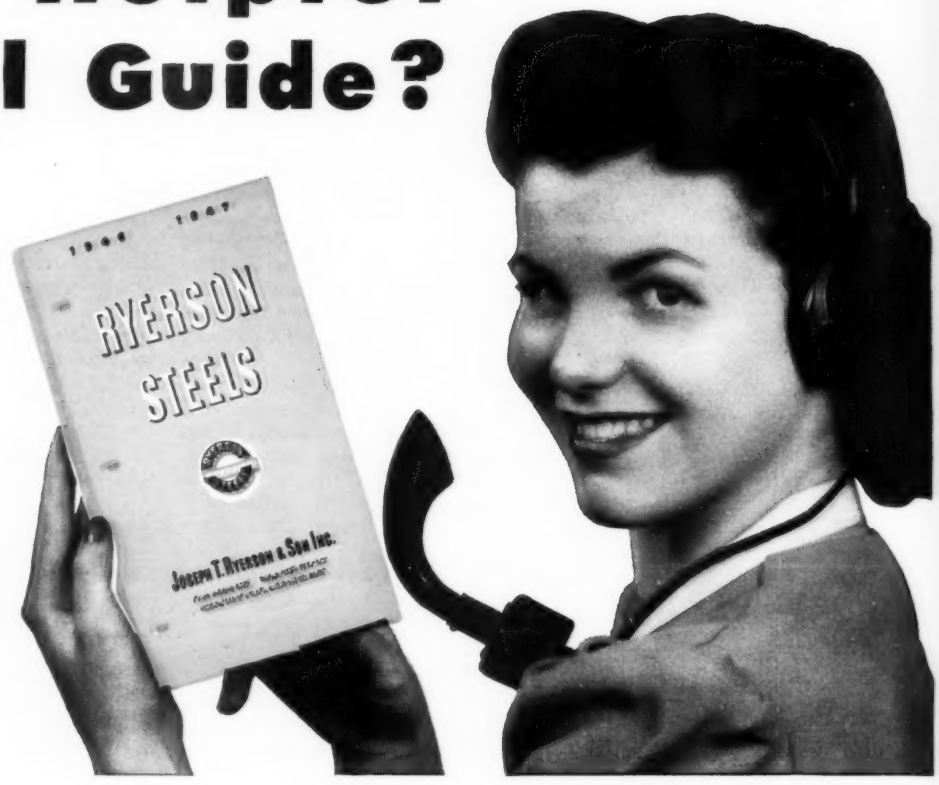
1. To provide a system which will permit installation of the headquarters transmitter and its associated receivers at the very best location in order to achieve the most effective two-way communication possible over large areas of difficult terrain.

2. To provide for the control of one such transmitter and receiver from more than one location.

3. To provide for the control of several transmitters at different locations by a centrally located operator, thus requiring fewer operators. This would make it possible to concentrate the control of communications dispatching for a large area at the single point where executive or administrative control of the men operating within that area is located. Such a system would permit maximum coordination or teamwork between administrative functions and the radio-equipped mobile-police force.

4. To permit simultaneous control of several transmitters from one central point, assuring good coverage in mountainous areas by blanketing such an area with signals from each of several directions. In such a manner, "dead spots" can be reduced appreciably, even in terrain that is extremely difficult to cover. Such a plan is far more effective than to attempt to secure the same degree of coverage by the use of higher power, or by the use of antenna "gain" or by higher antenna.

Are You Using this Helpful Steel Guide?



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Complete information on Ryerson Steel—detailed listing of more than 10,000 kinds, shapes and sizes—ready for your steel buying convenience in the new Ryerson Stock List and Data Book. Also included are pages of time-saving informative data on Average Physical Properties, AISI and SAE Standard Steel Compositions and a wealth of other facts and figures. The book is cataloged to simplify the work of purchasing men, metallurgists, engineers—everyone who specifies, buys or works with steel.

All sizes listed are not always in stock, because of the great demand, but Ryerson continues to carry the country's largest stocks. With the Ryerson Stock List to guide you, one call, one order, one shipment, will often cover a varied group of steel needs.

Copies of the current 1947 edition have been widely distributed, but if you do not have one, contact the Ryerson plant nearest you. And be sure to check Ryerson for all steel requirements. If the exact steel you need is not in stock our experienced staff will be glad to suggest a practical alternate.

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RYERSON STEEL

Can Vacuum Filters Improve Final Effluent?

UP IN Providence, R. I., we ran across an intriguing statement, attributed to Superintendent Howard Carpenter, in the local paper. It went to the effect that the installation of vacuum filters and sludge incinerators would substantially increase the plant's efficiency and allow greater removals of suspended matter from the final effluent. From a casual observation one might be tempted to say that this would put the Providence installation of vacuum filters in a really remarkable class. We do not normally expect vacuum filters or sludge incinerators to have much of a bearing on the quality of the effluent.

The strange part of it is that such an installation will do just exactly what he says. In the past, this plant has been using a set of sludge presses whose limited sludge capacity prevented operation of the activated sludge plant at its normal efficiency. The plant also has had serious difficulties because of precipitation of sludge in the mixed-liquor channels. By remodeling the channels to increase the velocity of flow and installing air diffusers in the bottom of the channels to prevent precipitation of the sludge in the mixed liquor, and then by providing sludge filtering capacity to handle this sludge, they will improve the final effluent.

All of which simply points up the fact that an unusual operation is not always so unusual once you get all the facts. It is safe to assume that Superintendent Carpenter gave all the facts to the reporters, but that they suffered from short circuiting in the journalistic settling tank.

Rhode Island Plans Cleanup of Narragansett Bay

THE Rhode Island State Department of Health recently told state authorities what is required to clean up Narragansett Bay and reclaim its natural resources. In a formal report, Walter J. Shea, Acting Chief, Division of Sanitary Engineering, pointed out these main factors.

1. That increased population and industrial activity have caused pollution to reach farther into the bay.

2. That a district be formed to provide treatment in a single plant of the sewage and industrial wastes which originate in the several communities and industries in the area.

3. That money backed by the credit of the state be borrowed to finance planning and construction of the work.

4. That consulting engineers be engaged to prepare plans for a treatment plant that would include primary treatment and post-chlorination.

5. That the project should be made self-liquidating by assessment of equitable service charges annually on each of the municipalities whose sewer system is connected, and also on any industry which has a separate connection.

6. That each municipality or industry within the district should be required to connect to the district.

7. That legislation should be enacted permitting any municipality to assess annual sewer service charges on all properties connected to its sewer system to meet the cost of sewage treatment.

8. Where pollution exists which may be successfully and economically abated without the creation of a sewerage district including more than one municipality, existing laws should be enforced, and present exemptions granted under the law, removed.

9. That the laws should be strengthened to provide better control of oil pollution.

10. That Rhode Island should join with the other New England states in compacts to control pollution of interstate waters and thus control pollution coming from without the state.

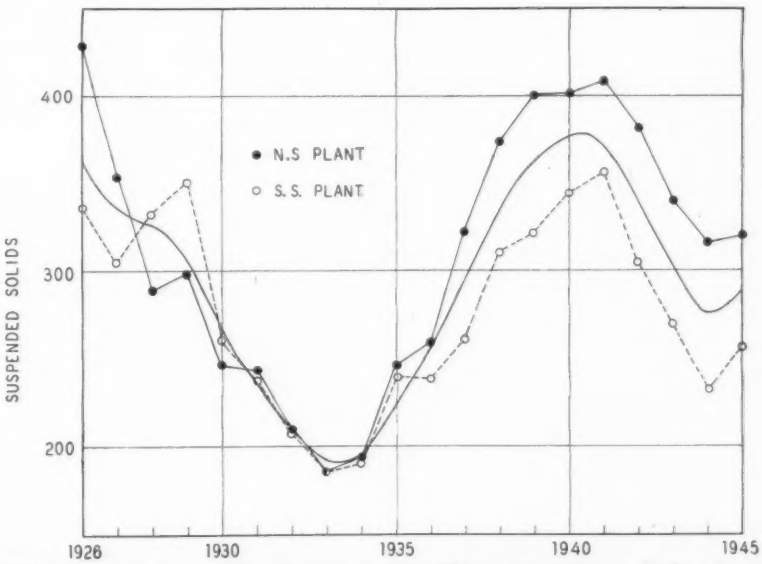
Marine Borers Return When Pollution Goes

A REVERSE twist in the general approach to the field of stream pollution abatement appears in a report by the Marine Borer Research Committee for New York Harbor. This report states that with the gradual lessening of harbor pollution, a revival of marine borer activity is possible.

The report records that the Port of New York suffered from activities of the borer in the latter part of the nineteenth century. Later, however, sewage and industrial waste in the harbor waters created conditions which discouraged not only the marine borer but the rest of the fish life—and everyone else, for that matter. At any rate, with the absence of the borer, harbor builders began construction of pier substructures with untreated piling.

With the construction of various sewage treatment plants, and with attention focused on stream pollution abatement, pollution in the harbor is gradually lessening. Active borers have attacked unprotected wooden pile structures near the Narrows and City Island.

The Marine Borer Research Committee is headed by W. P. Hedden, director of Port Development, The Port of New York Authority, and has as its secretary H. C. Ames, manager, Department of Piers, Northern Domestic Divisions, United Fruit Co.



Did you ever try correlating the suspended solids content of your city's sewage with the community's economic condition? W. E. White, chief design engineer of Houston, Texas, obtained this result. The smooth curve is an approximation of the average condition in the North Side and the South Side plants.

"HTH has no equal!"

says Everett Harris, First Engineer, Moberly Water Dep't, Moberly, Mo.

Water Plant—Moberly, Mo.

FOR 18 YEARS, *Sanitation HTH has been used consistently by the Water Dep't of Moberly, Missouri for regular and special chlorination . . . for cleaning filtration screens . . . for treatment of coagulation basins and pipelines.*

So these comments of Mr. Harris really count: "I know what HTH can do, and I wouldn't be without it; in addition to using it every day, I insist that we keep at least 12 cases of HTH on hand for any possible emergency. In my opinion, HTH has no equal!"

Mathieson's 80-page booklet "Hypo-Chlorination of Water" not only discusses the many uses of Sanitation HTH, but also describes standard sanitation practices. It's a valuable reference manual, and it's free to all water works men. Send for your copy today! THE MATHIESON ALKALI WORKS (INC.), 60 East 42nd Street, New York 17, N. Y.

SANITATION HTH is available in cases of nine 5-lb. cans and in 100-lb. drums.

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SANITATION HTH

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Automatic Loading Trucks For Garbage and Refuse Collection

551 The Leach Compactor features a low loading height, automatic loading method, a truck body that is completely closed at all times. These same advantages may be obtained for non-compactible refuse in the Leach Refuse-Getter. For detailed information, write to the Leach Co., Oshkosh, Wis.

Swimming Pools Made Sanitary

552 Do you need data that will tell how to equip swimming pools with the proper set of filters and distribution system when it is in operation? Do you have the full information on the chemistry and bacteriology involved that insures a sterile water? Refinite has a booklet that will help answer these questions. Write to Refinite Sales Co., 101 Refinite Bldg., Omaha, Nebr., and ask for *Swimming Pool Equipment.*

Recondition Pipe Lines

553 The Centriline Corp., 140 Cedar St., New York 6, N. Y., will send you information about its method of reconditioning pipe lines of 30 inches or larger, underground and in place. The process consists of thorough cleaning, then centrifugally-applied cement mortar lining.

Raw Sewage Pumps

554 Bulletin 964-D describes in detail the Buffalo non-clogging raw sewage pumps in vertical and horizontal solid-shell, horizontal diagonally split shell, and self-priming horizontal pumps. Write to Buffalo Pumps Inc., 490 Broadway, Buffalo 5, N. Y.

Automatic Control Of Tank Operations

555 Floatrol gives automatic control of sequence-operation of from one to three circuits for pumps, valves, or alarms in open tanks and sumps. It may be obtained with depth-indicator and manual-transfer plugs or automatic alternator. Bulletin F-6 describes it in detail, while Bulletin S-7 gives all the data on Selectrol, which controls more than three circuits. Write to the Automatic Control Co., 1015 University Ave., St. Paul 4, Minn.

Steel Forms

556 Blaw-Knox form set-ups give a smooth concrete finish and can be reused for any type of paving job. Catalog No. 1859, distributed by the Blaw-Knox Division of Blaw-Knox Co., 2102 Farmers Bank Bldg., Pittsburgh 22, Pa., gives all the data.

Built-in Dependability in Diesel Power

557 Have you certain power needs, either for water or sewage pumping, or the production of electricity, that calls for dependability and low cost? If so, write to Enterprise Engine and Foundry Co., San Francisco 10, Calif., and tell of your requirements. At the same time ask for this company's new booklet on diesel power.

Low Volume At High Pressures

558 Here is a catalog that describes the solution to those unusual pumping problems where the volume need not be high, but the head that the pump works against is excessive. The unit that meets these conditions is Byron Jackson's new Hydropress pump. To learn about it, write to Byron Jackson Co., Box 2017 Terminal Annex, Los Angeles 54, Calif., and ask for Bulletin No. 46-6000.

Automatic Tax Computations

559 Financial directors may be interested in the Sundstrand tax computing machines which speed up billing and posting and automatically compute and print. The Underwood Corp., One Park Ave., New York 16, N. Y., will send you a booklet describing this machine.

Sewer Rod Equipment

560 You may think that larger-diameter pipe is the answer to your problem, when all that may be required is an efficient cleaning of your present installations. Contact the Flexible Sewer Rod Equipment Co. for information about cleaning 4-, 6-, and 8-inch pipes. The address is 9059 Venice Blvd., Los Angeles, Calif.

Have You Airport Paving Problems?

561 The engineers of the Portland Cement Association, Dept. A2-4, 33 W. Grand Ave., Chicago 10, Ill., will be glad to consult with you about the most efficient design for cement paving of your proposed municipal airport. The many advantages of concrete plus the low initial and upkeep costs make it worth investigating.

Corrosion-Resistant Alloys

562 *The Technical Handbook* contains information on brass and Duronze alloys, and is obtainable by writing to the Bridgeport Brass Co., Bridgeport 2, Conn. Duronze products are usable in all types of municipal construction works that require high resistance to corrosion due to moisture.

Asphalt Surfacing Direct from Shipping Drum

563 The Tarco sprayer can be used for street repair, resurfacing, and construction, and saves time and labor by applying asphalt emulsions directly from the shipping drum. For data, write to the Tarrant Mfg. Co., East Ave., Saratoga Spa, N. Y.

Automatic Power and Tank Primers

564 For information about Apco-V-Apco automatic power or tank primers, write to the Valve and Primer Corp., 30 West Washington St., Chicago, Ill. This company also manufactures air release valves for filter pipe lines and distribution lines.

Spreaders for Summer and Winter

565 The Model E ice-control unit is designed to spread aggregates to reduce the danger of icy roads. It is found useful by municipal departments in other types of work as well. The unit spreads calcium chloride to control dust and seal coatings and can be adjusted to spread either thin or thick layers on two or four lanes. Write to the Highway Equipment Co., Inc., Cedar Rapids, Iowa, for further details.

A Powerful Pump for Close-Quarter Work

566 Here is a booklet that will help you solve problems of line pumping, booster pumping, drainage, dewatering, and recirculation, particularly when you require short pump settings with deep-well turbine power and capacity. The pumps employ a shortened shaft and pump column with the necessary number of bowls and impellers. The bulletin has cutaway views, diagrams, and suggested methods of installations. Write Peerless Pump Division, Food Machinery Corp., 301 West Avenue 25, Los Angeles 31, Calif.

Flexible Tee Coupling

567 The Smith-Blair flexible tee coupling eliminates the necessity of threading the pipes to be connected. Since it requires few fittings, it saves time and labor in installation. Additional information is available from Smith-Blair, Inc., South San Francisco, Calif.

Street-Level Sewer Cleaning

568 OK Champion's power sewer cleaner takes debris up from the sewer in a continuous operation, with all men working above the street level. For complete details write to the Champion Corp., 4716 Sheffield, Hammond, Ind.

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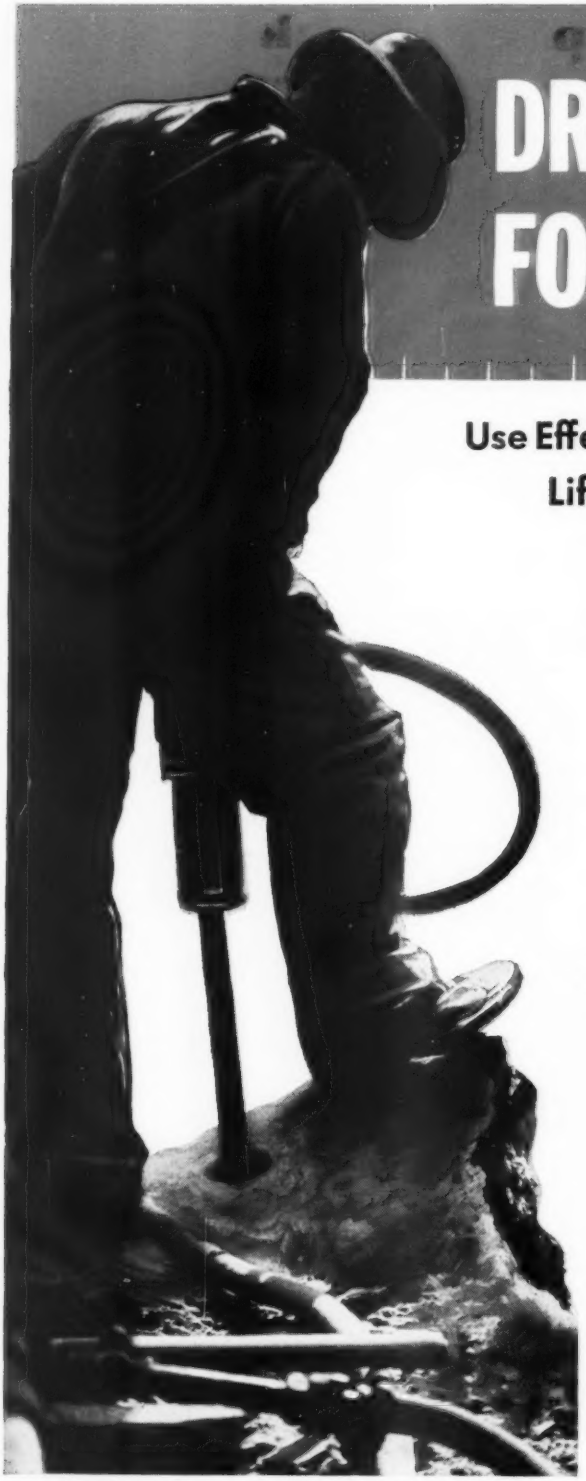


DRILL GREATER FOOTAGE at Lower Cost

Use Effective Lubrication to Increase Drill Life and Reduce Maintenance Cost

You can't buy more effective lubrication than Texaco Rock Drill Lubricants (E.P.) — and those letters "E.P." are an important reason why. They mean the oil has Extreme Pressure properties . . . extra high film strength to protect drills under the toughest conditions.

In addition, Texaco Rock Drill Lubricants (E.P.) flow readily at all temperatures, resist oxidation, cling protectively to moving parts and reduce wear. They prevent rust and corrosion whether drills are running or idle.

This all-around protection keeps drills running smoothly and on the job longer, with less downtime for repairs and overhauls. That's why operators and drill doctors everywhere prefer Texaco Rock Drill Lubricants (E.P.) and why leading rock drill manufacturers approve them.

Call on Texaco Lubrication Engineering Service for helpful suggestions on drill operation and maintenance. Contact the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

KEEP COMPRESSOR VALVES CLEAN

Here, too, effective lubrication is vital. *Texaco Alcaid, Algol and Ursa Oils* provide effective lubrication, prevent hard carbon formations, keep valves clean and active, rings free, ports open and air lines clear. Your Texaco Lubrication Engineer will recommend the right one to keep your compressors running right — efficiently and economically.

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Tune in . . . TEXACO STAR THEATRE presents the NEW TONY MARTIN SHOW every Sunday night. See newspaper for time and station.

Stop—Check and Mail

Use Coupon on Page 21

Low Loading Height Speeds Refuse Collection

569 Low loading height, added to a 10-yard capacity, high compression rate, and facile discharge, contribute toward speedy and economical refuse collection. For full details and description of the Colecto-Pak, write to The Heil Co., Milwaukee 1, Wis.

A Pump for Your Needs

570 The Morris Machine Works, Baldwinsville, N. Y., can supply specification and operation data about the best Morris pump for your particular needs. These pumps have been found efficient on many municipal water works projects, and the manufacturers maintain that they can supply a pump specifically suited to every type of job.

Uniforms Give Character To Municipal Workmen

571 Reeves Brothers, Inc., 54 Worth St., New York 13, N. Y., can help make your city's departmental employes look well-groomed in finest Army twill. Manufactured to meet government specifications, the materials are durable, vat-dyed, and sanforized. Write for further information.

Cut Election Costs and Speed Up Returns

572 Automatic voting machines do more than prevent improperly marked ballots. They actually cut your election costs. The Automatic Voting Machine Corp., Jamestown 55, N. Y., will be pleased to send you additional details about this product.

Don't Overcharge Your Citizens

573 A parking meter that gives too little or too much time is a trouble maker. Investigate the Karpark Automatic—highly dependable and accurate. For additional data, write the Karpark Corp., Cincinnati 6, Ohio.

Handy Calculator Available Now

574 A low-priced calculating machine made in Sweden and weighing only 11.7 pounds can be furnished from stock by Ivan Sorvall. 210 Fifth Ave., New York 10, N. Y. Literature is available describing the calculator and its operation.

Flow, Pressure, and Level Measurements

575 Easily understood and at the same time thorough, the three bulletins issued by Republic Flow Meters Co., 2240 Diversey Parkway, Chicago, Ill., tell you about open channel flow meters, Bulletin No. 720; pressure-flow meters, Bulletin No. 110, and liquid level and pressure recorders and indicators, Bulletin No. 900.

Remote Indication and Control Systems

576 Here is a bulletin describing a remote indication and control system that will intrigue you. This is the same system of remote control used on battleships for signaling. It can be used on governors, switching devices, sequence controls, remote indicating systems and remote signaling. Write to Allis Chalmers, Milwaukee, Wis., for the bulletin, *Remote Indication and Control Systems* and see where you can apply them.

Save Material With This Spreader

577 The Flink Self-Feeding spreader has a safety protective housing which not only prevents spraying, but also reduces maintenance care. Ideal for seal coating, road re-surfacing, dust control, and ice-control, the unit may be attached to the truck in five minutes. Write to The Flink Co., Dept. 671, Streator, Ill. for more data.

Reduce Tank Maintenance By Arresting Rust Formation

578 For full details describing Rusta Restor's cathodic method of reducing tank maintenance by eliminating the formation of rust, write to The Johnston & Jennings Co., 851 Addison Rd., Cleveland 14, Ohio.

More Air Quicker From These Compressors

579 Municipal officials may be interested in the Air Plus compressors which embody a patented leak-proof closing, thus delivering more air at slower piston speeds at an extremely low fuel cost. Catalog JC-5, describing the "ultra-lapping" features of the compressors, will be sent to you by The Jaeger Machine Co., Columbus, Ohio.

250% Greater Visibility In Post-War Fire Engines

580 Counteracting the pre-war trend of less and less visibility, the new post-war American-La France fire engine is constructed with the cab in front of the engine. Write to the American-La France-Foamite Corp., Elmira, N. Y., for detailed information on the construction that permits an increase of 250% in visibility.

Is Your Fire Alarm System Adequate?

581 The efficient method of fire notification is by means of a fire alarm telegraph system. If the system in your city is antiquated or insufficient to meet the growing demands of your municipality, write to The Gamewell Co., Newton Upper Falls 64, Mass., for detailed information.

Pipe and Leak Locators

582 Joseph G. Pollard Co., Inc., 141 Ashland Pl., Brooklyn 1, N. Y., eastern distributors of the Fisher M-Scope buried-pipe-and-cable finder, will send information about pipe and cable finders as well as water leak detectors. Data on them will help you improve the efficiency of your water services.

This Air Compressor Improves Output

583 The Econotrol, a device for automatically adjusting the speed of the engine according to the air requirement, with gradual acceleration and deceleration, is just one of the factors that makes the Le Roi Airmaster an economical and efficient air compressor. For additional data, write to the Le Roi Co., Milwaukee 14, Wis.

Truck Springs Important For Long Service

584 The ability of the springs in Ford trucks to resist fatigue is one of the many important factors that contribute to the long life of Ford's trucks. Of special alloy with high tensile strength, the springs are especially built to give double-acting shock resistance. Additional information on the 100-hp V-8 and 90-hp Six is obtainable; write to the Ford Motor Co., Dearborn, Mich.

Counts, Wraps, and Bags Coins

585 The Universal Business Equipment Co., 537 S. Dearborn St., Chicago 5, Ill., will send you upon request a descriptive circular giving full data on its line of coin counters for counting, wrapping, or bagging any size coin.

Keeping Records

586 A sixteen-page bulletin discussing the planning, organization, production, utilization, housing, and protection of municipal and other goverment records of all kinds may be obtained from Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y. Ask for X-693A. It illustrates types of equipment and supplies, and shows how integrated record systems can be created and maintained by proper selection and coordination.

The Right Floormat Raises Work Efficiency

587 The American Mat Corp., 1697 Adams St., Toledo 2, Ohio, will send you its folder of mat descriptions and prices, "A Mat for Every Purpose", with information on how to increase safety and comfort and reduce fatigue with the proper use of rubber, plastic, fabric, link, and cord types of matting.

Aerial Maps Reduce Engineering Costs

588 For a pointed synopsis of methods of aerial surveys, write to the Abrams Aerial Survey Corp., Lansing, Mich. City officials contemplating any type of construction planning, or zoning will find the detailed data invaluable.

Summer a Lawn Mower, Winter a Snow Plow

589 The Model 85-C Trimalawn power mower cuts a swath of 21 inches and is run on a 1½ hp motor, making it ideal for parks and school lawns. It is a year-round mechanism, too, since a snow-plow attachment can be fitted to the mower. Write to the Lawn Mower Div., Reo Motors, Inc., Lansing 20, Mich., for details of the power mower and the hand mower.

Asphalt Kettle

590 The pump on the hand-spray attachment of the 84-HD Littleford asphalt kettle is submerged in the liquid that is to be spread, thus preventing any freeze-up of the mechanism. This is just one of the efficiency features of this kettle, which may be used for all types of patch work. For further information, write for Bulletin O-1, Littleford Bros., Inc., 500 East Pearl St., Cincinnati 2, Ohio.

Break Concrete The Low-Cost Way

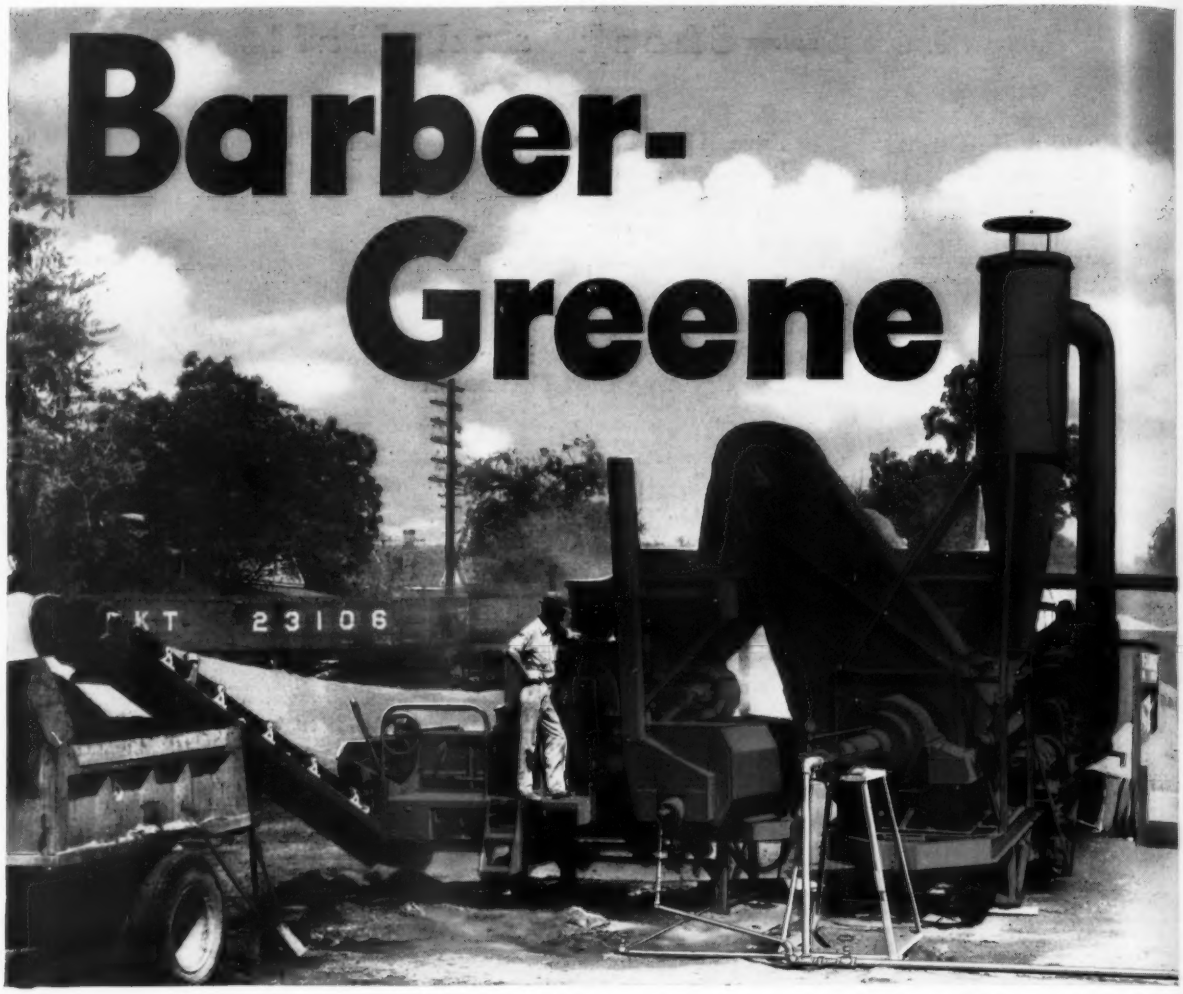
591 Rapid pavement-breaking machines that are adapted to inside or outside work and can break materials to various sizes are an important addition to your line of equipment. Rapid Pavement Breaking Corp., 1517 Santa Fe Ave., Los Angeles, Calif., will send you information about its heavy-duty and its trailer-mounted mobile units.

Lengthen the Life Of Fire Hose

592 The Circul-Air Corp., 575 E. Milwaukee St., Detroit 2, Mich., will send you information of its Circul-Air fire hose-dryer, which performs quickly and easily the indispensable process of drying hose to prevent stretch and rotting.

(Continued on Page 25)

Barber-Greene



Typical set-up of the Barber-Greene Maintenance Plant. Various combinations to meet your immediate needs may be easily arranged.

This *Small* Bituminous Mixing Plant Does a *BIG* Job!

Here's a complete, easy-to-operate, small bituminous mixing plant! It is specifically designed for maintenance and repair work, small road building projects and a variety of other surfacing jobs. The B-G Maintenance Plant will handle any type of mix, and its capacity is remarkable, considering its size and portability.

The B-G Maintenance Plant is truly portable and easily erected. Small enough to operate at low cost on maintenance and general repair work, it is still large enough to handle small construction projects. It operates on the same principles as the larger Barber-Greene Central Plant, measures the correct amount of aggregate and bitumen, thoroughly mixes them and discharges the mix into trucks.

It consists of two basic units—the 840 Mixer and 830 Aggregate Dryer. Each unit is equipped with a towing hitch and pneumatic tires to trail smoothly behind your truck when going from job to job. A complete line of auxiliary equipment available including Reciprocating Feeder, Bins, Dust Collector, etc. For illustrative literature, write Barber-Greene Company, Aurora, Illinois.

BARBER-GREENE COMPANY · AURORA, ILLINOIS

Constant Flow Equipment

LOADERS · PERMANENT CONVEYORS · PORTABLE CONVEYORS · COAL MACHINES · BITUMINOUS PLANTS · FINISHERS · DITCHERS

Stop—Check and Mail

Use Coupon on Page 21

Clean Water Pipe Makes Higher Pressure

593 Incrusted pipe mains mean lower pressure, less capacity, high pumping costs. For information and estimates on efficient pipe cleaning, write to the National Water Main Cleaning Co., 50 Church St., New York 7, N. Y.

Kill Those Weeds

594 Knox-Out Weeds Liquid, a new liquid compound, is the effective way of destroying hay-fever weeds, as well as poison ivy and other toxic weeds. An 8-page color leaflet describing the product and giving instructions for its use may be obtained by writing to the Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa.

A "Packaged" Remote Control

595 The Synchro-Link is a remote positioning control that will quickly and accurately position one or more distant motors according to the setting of the control transmitter. It is adaptable for the control of speed transmissions, valves, dampers, furnace doors, machine tools, etc. For data write to the Yardeny Laboratories, Inc., 105 Chambers St., New York 7, N. Y.

Waterworks Chemicals

596 If you would like the latest word on chlorine and soda ash, you can get it in a pair of small, attractive folders from the Pittsburgh Plate Glass Co., Columbia Chemical Division, 5th Ave. at Bellefield, Pittsburgh 13, Pa.

One Structure For Pool and Bathhouse

597 Descriptions may be obtained from Wesley Bintz, 301½ S. Washington Ave., Lansing 25, Mich., of these unusually designed swimming pools which economically incorporate pool and bathhouse in a single structure. Municipal pools thus constructed may include a variety of recreational games and facilities.

Metered Parking Solves Problems

598 A 4-page brochure, DU-501, outlines the result of a comprehensive study on the many advantages of solving your municipality's parking-traffic problem with metered parking. Write to The Dual Parking Meter Co., Milford Bldg., Canton, Ohio, for a copy.

Clean Oil Makes Engines Last

599 Give your diesel engines a break. Look at the record that the Honan-Crane Corp., 215 Wabash Ave., Lebanon, Ind., has rolled up with its lube oil purifiers. Ask for this company's bulletin, *Clean Oil*.

Books on City Planning

600 The Reinhold Publishing Corp., 330 West 42 St., New York 18, N. Y., has a complete listing of books on city planning which are authoritative and comprehensive. The company will send you information and literature describing them so you can select the book that most nearly meets your needs.

Better Street Lighting

601 Efficient and economical lighting is a necessity in every municipality. Joslyn Utilux Suburban Luminaires reduce glare and increase light. For complete details, write to the Joslyn Mfg. and Supply Co., 20 North Wacker Drive, Chicago 6, Ill.

Reflectorized Signs Give Maximum Night Visibility

602 Tassco night-and-day signs are entirely reflectorized for mixmum visibility. Constructed of a weather-resistant alloy, with an all-aluminum seamless head, and shatterproof non-peeling name strips, these traffic and highway signs may be obtained from stock. For information, write to the Traffic & Street Sign Co., 83 Foundry St., Newark 5, N. J.

Accurate Water Metering

603 The Worthington-Gamon liquid meters come in all sizes to measure the smallest to the largest flow, in either current or velocity designs. For information, write to the Worthington-Gamon Meter Co., 296 South St., Newark 5, N. J.

Some Facts on Fire Hose

604 Stressing the importance of fire hose in combatting the rising trend of losses by flame in the United States, a new folder, "Firemen Can Work Faster with B. F. Goodrich Hose," has just been published by The B. F. Goodrich Co., Akron, Ohio. The folder points out that the first canvas-covered, rubber-lined first hose ever seen by a fireman was introduced to the fire department at Cincinnati, Ohio, in 1870 by Dr. B. F. Goodrich, the company founder. This was the year the company started its operations in Akron, Ohio. Other outstanding contributions of the company to fire-hose developments are listed, and the entire line of products for this field is pictured and described.

A Combined Shovel and Bulldozer

605 The Model HL 1-yard Payloader, manufactured by The Frank G. Hough Co., 710 Sunnyside Ave., Libertyville, Ill., is adaptable with crane and bulldozer and may be obtained in either gasoline or diesel-engined models. Complete specifications are available by writing to the company.

Precalked Pipe Cuts Laying Time

606 All that is required, when precalked pipe is used, is a hammer and calking tool; no expensive equipment, no expensive skilled labor. The McWane Cast Iron Pipe Co., Birmingham 2, Ala., will send you full information on how to use this in your water system.

Is Your City Ready for a Fire?

607 The Great American Industries, Inc., Elmira, N. Y., can give you counsel on how to equip your community's fire department with the type of fire apparatus that will do the most good. Also available is information on its Ward-LaFrance Triple Combination Pumpers.

Vertically Split Case Multi-Stage Pumps

608 Catalog B-1146, published by Economy Pumps, Inc., Hamilton, Ohio, describes its CS, vertically split case multi-stage pumps, built for capacities ranging from 50 to 200 gpm. These pumps are applicable to boiler feeding, general water supply, and pneumatic water systems, and may be driven by electric motors, steam turbines, gasoline engines, or chain or belt drive.

No Caulking Necessary In Jointing Cast-Iron Mains

609 Leadite, shipped in powder form, eliminates the necessity of caulking the joints of cast-iron water mains. There are no large bell-holes to dig, and the economy that results is appreciable. Additional information will be supplied by The Leadite Co., Girard Trust Co. Bldg., Philadelphia 2, Pa.

Maintenance, Construction Rollers

610 Whether it is for close-in work and small area maintenance or for heavy-duty work, there is a Pierce-Bear Roller for your city's needs. Write to the Lewis Mfg. Co., 415 Hoefgen Ave., San Antonio 6, Texas, for its descriptive folder.

Control Units For Generators

611 A new 4-page bulletin in color, illustrating and describing sixteen improved models of E-C Lightrol engine-generator, automatic, load-demand control units has just been issued. Address your request for Bulletin 102-L to Engineering Controls, Inc., 2833 East 11 St., Los Angeles 23, Calif.

Ten- and Twelve-Ton Trucks

612 Four-wheel-drive trucks of the 10-and 12-ton class are described, and their various uses illustrated, in a new brochure. Write The Four Wheel Drive Auto Co., Clintonville, Wis.

New Tri-Clad Vertical Induction Motors

613 The General Electric Co.'s Apparatus Dept., Schenectady, N. Y., has prepared a booklet describing the vertical motor line for pumping, with power ranges from 1 to 500 hp, with all speeds and frequencies, and with hollow shaft or high-thrust solid shaft. The company will send you a copy on request.

Don't Let Roads Deteriorate

614 The Littleford Trail-O-Roller is a compact motorized machine that is quickly converted from rolling to traveling. This highly-efficient quickly portable roller is ideal for small patch jobs. Complete specifications are available from Littleford Bros., Inc., 500 E. Pearl St., Cincinnati 2, Ohio.

Valves and Hydrants

615 M & H valves, hydrants, and pipeline accessories are made to standard specifications and give above-standard performances. Catalog No. 34 gives all the details. Write to the M & H Valve and Fittings Co., Anniston, Ala.

Has Your City A Parking Problem?

616 Park-O-Meters are economical to buy, economical to maintain, but quite generous in the return on their initial cost. They solve the parking problem and provide a constant source of income. Details will be supplied by the Magee-Hale Park-O-Meter Co., Commerce Exchange Bldg., Oklahoma City 2, Okla.

Water Chlorination

617 For water chlorination, cleaning of filtration screens, and treatment of coagulation basins and pipelines, Sanitation HTH has been found invaluable by many municipal engineers. Complete information is given in a booklet entitled *Hypo-Chlorination of Water*. Write to The Mathieson Alkali Works (Inc.), 60 E. 42 St., New York 17, N. Y.

(*Continued on Page 26*)

PROBLEM: LAYING PIPE UNDER THIS BUSY INTERSECTION WITHOUT STOPPING TRAFFIC, DAMAGING STREET . . .

SOLUTION:

PIPE QUICKLY PUSHED UNDER STREET WITH GREENLEE HYDRAULIC PIPE PUSHER . . . . . .

Yes, the Signal Department of the Chicago Division, Rock Island Lines, speeds and simplifies under-street installations of heavy duty electric conduit with a GREENLEE Pipe Pusher. No need to tear up streets, dig long trenches, backfill, repair and restore streets to their former condition.

Think of the savings this means. As reported by Rock Island Lines' Signal Engineer C. R. Swenson, "I would say that at the very least, the Greenlee Pipe Pusher cuts our costs for laying pipe under street crossings to one-third that of the trenching method. That Pipe Pusher repaid its cost long ago."

You too can make important savings with this equipment . . . install pipe easier, faster, better. With the GREENLEE Pipe Pusher *one man* pushes pipe through the ground . . . *under* streets, sidewalks, lawns, flooring, tracks and other obstacles. Get facts now on this timesaving GREENLEE Pusher which often pays for itself on first few jobs.

TOOLS FOR CRAFTSMEN

GREENLEE

Send for complete information now on GREENLEE Hydraulic Pipe Pushers.
Greenlee Tool Co., Division of Greenlee Bros. & Co., 2024 Columbia Avenue, Rockford, Illinois

Check and Mail

Use Coupon on Page 21

Outdoor Fountains, Yard Hydrants

618 The Murdock Mfg. & Sup. Co., 426 Plum St., Cincinnati 2, Ohio, will send you complete data on its line of drinking fountains, lock-lid street washers, and anti-freezing compression or self-closing yard hydrants.

Superior Diesels

619 Each cylinder of the Superior diesels has an air-starting valve with overlapping timing. As a result, one or more cylinders is always receiving starting air while in a turning position. Write to the Superior Engines Div. of The National Supply Co., Springfield, Ohio, for details.

Fire Fighting Equipment

620 Here is an easy way to build modernization into your fire-fighting equipment. Convert the equipment in your department to multiple-purpose use by installing dual-purpose centrifugal pumps that deliver either a solid stream or a fog spray. Write to the American-Marsh Pumps, Inc., Battle Creek, Mich., for literature that tells how.

Efficient Piping

621 The American Pipe & Construction Co., P. O. Box 3428, Terminal Annex, Los Angeles 54, Calif., will send you complete information on pipe construction methods that give a high capacity at a maximum economy, whether it is main water-supply lines, storm and sanitary sewers, or sub-aqueous pipeline construction in which you are interested.

Fences Galvanized After Weaving

622 The Cyclone Fence Div. of the American Steel & Wire Co., Waukegan, Ill., galvanizes its copper-steel fences after the weaving process, and thus obtains greater weather-resistance. Write to Dept. B-37 for a thirty-two-page illustrated book of information on types, and specifications.

How to Make Water Filters Perform Better

623 Anthrafilt, a general-purpose filter medium that has proven highly versatile, is produced by the Anthracite Equipment Corp., Anthracite Inst. Bldg., Wilkes-Barre, Pa. Additional data may be obtained by writing to the Palmer Filter Equipment Co., 822 E. 8 St., Erie, Pa.

Mechanically Stoked Incinerators

624 Modern equipment saves time and labor. If you are interested in either installation or modernization of your municipality's incineration system with a Nichols Monohearth mechanically stoked refuse incinerator, write to the Nichols Engineering & Research Corp., 60 Wall St., New York 5, N. Y., or University Tower Bldg., Montreal, Canada.

Choose the Right Protective Coat

625 United Chromium, Inc., 51 East 42 St., New York 17, N. Y. has prepared a brochure describing in detail the properties and characteristics of the various types of organic coatings, with information about the best resin for each type of job. Included with the brochure is a table showing at a glance which Unichrome lacquers have the best combination of properties for your product.

(*Continued on Page 28*)

PRODUCT IMPROVEMENT THROUGH DURONZE* ALLOYS

If you are a user or manufacturer of water works or waste disposal equipment, Bridgeport's Duronze Alloys can help you assure long, continuous service through greater freedom from corrosion and wear of vital parts.

For example, by eliminating the problem of rust "frozen" bolts and nuts you can reduce the maintenance cost of water meters to a minimum. Non-rusting Duronze bolts and nuts can be used over and over again. Longer life can be imparted to valves by the use of Duronze stems, washers, guides, and bushings. Duronze cap and machine screws, wood screws, nails and other fasteners prolong the usefulness of products for which they are specified.

Duronze Alloys are supplied in five different compositions for specific applications. When used in the presence of such corrosive elements as moisture, smoke and many gases and liquids or under conditions of severe stress—these modern alloys can be depended upon to outlast ordinary materials, for, in addition to their fine resistance to corrosion and wear, they possess great strength—from 80,000 to 100,000 lbs. per sq. in.

Contact the nearest Bridgeport office for help from our Technical Service Department in regard to improving products through the use of Duronze and other modern engineering alloys. *Reg. U. S. Pat. Off.

"Bridgeport" BRASS CO.

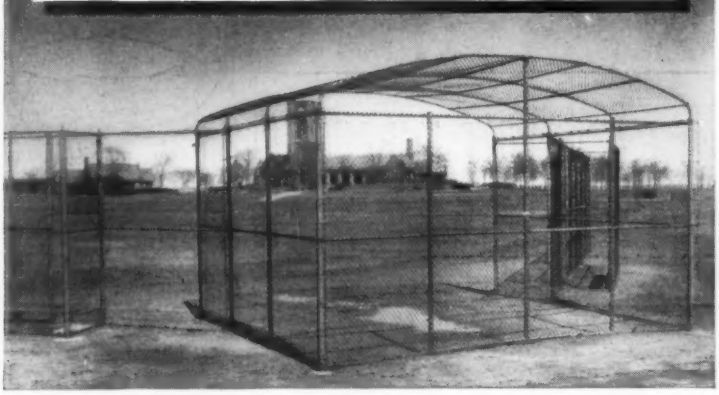
BRIDGEPORT BRASS COMPANY
BRIDGEPORT 2, CONN. • Established 1865

BRASS • COPPER • BRONZE • DURONZE • SILICON BRONZE
ALUMINUM BRONZE • CUPRO NICKEL • NICKEL SILVER
Rod • Strip • Wire • Tubing

Duronze Alloys—PRODUCTS OF

BRIDGEPORT BRASS

There's a type of Cyclone Fence to fit your particular needs



THE fencing needs of a power plant may be quite different from those of a park or school. But when you include Cyclone Fence in the plans, you're sure of the right fencing for the job.

There are 14 types to choose from—including the famous Cyclone Chain Link Fence for extra protection, and Cyclone Steel Picket Fence for extra beauty. And our trained engineers are available—without obligation—to help you pick the fence best fitted to your needs.

Write for our new free book describing all types of U·S·S Cyclone Fence. It will help you to judge for yourself the advantages of Cyclone's sturdy construction, special design and expert installation. You'll see the features that have made Cyclone the world's most widely used property protection fence.

Send for Free 32-page Book. Profusely illustrated. Full of facts and specifications. Complete information on different types of fence, gates, athletic field equipment, etc. Just mail the coupon.

CYCLONE FENCE DIVISION
(AMERICAN STEEL & WIRE COMPANY)
Waukegan, Ill. · *Branches in Principal Cities*
United States Steel Export Company, New York

CYCLONE FENCE DIVISION · American Steel & Wire Co. · USS CYCLONE FENCE · UNITED STATES STEEL

Cyclone Fence
Waukegan, Ill., DEPT. B-47

Please send me, free of charge, your 32-page book on Fence.

Name.....

Address.....

City..... State.....

Title or official capacity.....

UNITED STATES STEEL

Check and Mail

Use Coupon on Page 21

Hose and Fire Equipment

626 With distribution of Boston Woven Hose and Rubber Co.'s products through The General Detroit Corp., 2270 E. Jefferson, Detroit 7, Mich., officials may now obtain information on any fire equipment products of either of the companies by contacting The General Detroit Corp.

Garbage and Waste Destructors

627 Designed to handle any combination of combustible wastes, Morse Boulger destructors are guaranteed to give satisfaction, with company field men on the job until the equipment is in operation. Write for literature to Morse Boulger Destructor Co., 205-R East 42 St., New York 17, N. Y.

Convert Medium Trucks To Heavy Six-Wheelers

628 The Detroit Automotive Products Corp., formerly the Thornton Tandem Co., 8701 Grinnell Ave., Detroit 13, Mich., will send you data on its Thornton Drive, the mechanism that converts medium trucks to heavy-duty six-wheelers, and its NoSpin Differential, which automatically locks truck axles for safe, heavy duty.

Forty Different Coin-Rates In Parking Meters

629 Miller's Multiple-Coin parking meters may be adapted to over forty different coin-meter combinations to suit the needs of your municipality. Additional details may be obtained from the Duncan Meter Corp., 835 N. Wood St., Chicago 22, Ill.

Interchangeable Pipe-Cutter Parts

630 Ellis & Ford Mfg. Co., 148 South Woodward Ave., Birmingham, Mich., offers a complete line of pipe-cutter parts which may be interchangeably used with its cutter. Write for descriptions of its products.

Detects Leaks And Locates Pipe

631 The M-Scope not only locates buried pipe and cables, but will indicate to the operator dead-end pipe and pipe leaks. For a free 16-page booklet, write to the Fisher Research Laboratory, Inc., Palo Alto, Calif.

More Efficient Storage Batteries

632 The Hand Laboratory, Nyack, N. Y., manufactures improved storage batteries that are especially suited to all types of municipal mobile units. Additional data on request.

Direct Recirculation Improves Effluent

633 The Accelo-Filter system recirculates large quantities of the unsettled trickling-filter effluent. The result is an elimination of clogging and pounding and a great increase in capacity. Write for Bulletin 6200 to Infilco Inc., 325 W. 25 Place, Chicago 16, Ill.

Valves and Hydrants

634 Water works and sewage treatment officials may be interested in data and catalogs from the Iowa Valve Co., Hubbell Bldg., Des Moines, Iowa, concerning its hydrants, valves, and equipment for filtration and sewage disposal plants.

(Continued on Page 30)

LOWER OPERATION COST

SCORES IN LOUISIANA

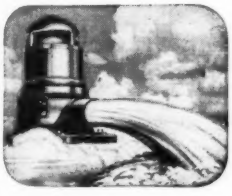
Louisiana with her wide diversification of industries, thriving cities and vast areas of irrigated rice lands has in use more than six hundred and thirty Layne Well Water Systems. These skillfully engineered and precision built systems,—equipped with the famous Layne high efficiency Vertical Turbine Pumps, are producing many hundred millions of gallons of water daily at an amazingly low cost.

Throughout the entire state of Louisiana, Layne Well Water Systems far outnumber all other kinds combined . . . proving by actual use that Layne equipment is definitely superior in high efficiency, rugged quality, and long life.

Nearly seventy years of specialized engineering experience and research stand behind Layne Well Water Systems. For your water supply needs . . . if quality, efficiency, and proven long life are factors, you will unquestionably prefer Layne Wells and Pumps. For literature address

LAYNE & BOWLER, INC.

General Offices, Memphis 8, Tenn.



PUMPS For

Wells—Lakes—
Rivers—Reservoirs—
Irrigation Projects

—are obtainable in sizes from 40 to 16,000 gallons per minute, powered by electric motor, V-belt or angle gear drives. Write for Pump Catalog.

LAYNE

WELL WATER SYSTEMS

VERTICAL TURBINE PUMPS

AFFILIATED COMPANIES—Layne-Arkansas Co., Stuttgart, Ark. ★ Layne-Atlantic Co., Norfolk, Va. ★ Layne-Central Co., Memphis, Tenn. Layne-Northern Co., Mishawaka, Ind. ★ Layne-Louisiana Co., Lake Charles, La. ★ Louisiana Well Co., Monroe, La. ★ Layne-New York Co., New York City ★ Layne-Northwest Co., Milwaukee, Wis. ★ Layne-Ohio Co., Columbus, Ohio ★ Layne-Pacific, Inc., Seattle, Wash. ★ Layne-Texas Co., Houston, Texas ★ Layne-Western Co., Kansas City ★ Layne-Western Co. of Minn., Minneapolis, Minn. ★ International Water Supply, Ltd., London, Ontario, Canada ★ Layne-Hispano Americana, S. A., Mexico, D. F.

Bucket unloads in less than a minute under fingertip control.

This new HEIL
COLECTO-PAK
Municipal Refuse
Disposal Body

gives you

Automatic, hydraulic-operated packer plate packs 20 yds. in a 10-yd. body.

Tapered body construction assures speedy discharge regardless of compression.

★ Low loading height
★ Double capacity
★ Complete enclosure
★ Easy maintenance

The all-enclosed, water-tight Heil Colecto-Pak is the answer to your search for a modern method of speeding-up, simplifying, and improving garbage collection and disposal.

This unit has a ¾-yard loading bucket at a 35-inch height making it extra easy to load. This "power-lifted" bucket deposits load and returns to starting position in less than a minute. At the same time the hydraulic-operated packer plate is compressing the material down toward the discharge end. It is possible to compress 20 yards of wrapped garbage into this 10-yard body.

With this unit your city has a clean, sanitary means of collecting garbage with none of the unsightly and unsanitary features imposed by "open body" collectors. Your city can feel proud of its advanced thinking in purchasing a Heil Colecto-Pak.

BH-114

Write for bulletins.

ARMY NAVY
THE HEIL CO.
GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

Check and Mail

Use Coupon on Page 21

These Concrete Pilings Solve Difficult Building Problems

635 Is your city planning new improvements in areas where foundation conditions are questionable? You can get assistance in overcoming this difficulty from the Western Concrete Pile Corp., 2 Park Ave., New York 16, N. Y. Literature distributed by this company tells how to drive piling that will produce a firm foundation in almost any type of ground.

Break-Point Process Improves Coagulation

636 If your municipality's water supply has a taste and odor problem, you may be interested in obtaining Technical Publication 213 from the Wallace & Tiernan Co., Inc., Newark 1, N. J. This booklet describes the advantages of improved coagulation and the elimination of objectionable tastes and odors by means of the break-point process.

Cast Iron Pipe For Eastern Users

637 Information about the complete line of plain-cast or spun-centrifugal cast iron pipe produced by the Warren Foundry & Pipe Corp., 11 Broadway, New York 4, N. Y., may be obtained by writing to the company. In sizes of from 2 to 84 inches, the pipe comes in a wide variety of specifications.

Diesel Engines With Economy Features

638 The Worthington diesels have a record of high kilowatt-hour-percentage per gallon of fuel oil, and low lubrication and maintenance costs. For details, write to the Worthington Pump and Machinery Corp., Engine Div., Buffalo, N. Y.

Gunite Rebuilds Concrete Structures

639 For a bulletin telling how gunite can repair concrete structures without costly rebuilding, write to the Pressure Concrete Co., 6 Avenue B, Newark, N. J., or South Court St., Florence, Ala.

Double-Metered For Added Accuracy

670 The Sparling meters have two meters in the mechanism, a smaller one to measure all flows below the minimum accuracy of the larger, with both meters driving through a common totalizer. For flow-ranges, write for Bulletin 309 to R. W. Sparling, Box 3277 Terminal Annex, Los Angeles 54, Calif.

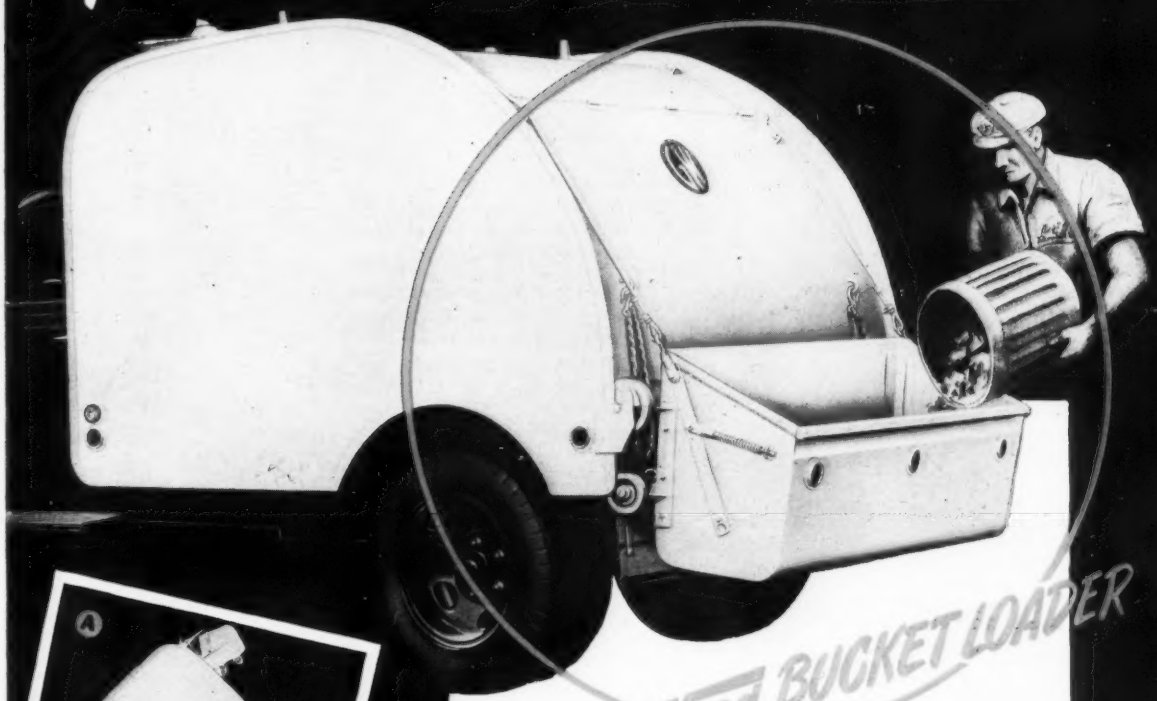
Kill Weeds with Sprayer

671 The new quick way of killing weeds with 2,4-D without killing flowers or adjacent shrubbery is described in a new catalog issued by John Bean Mfg. Co. The circular also describes the various types of sprayers for weedicide and liquid fertilizers, and the Spraymaster gun, which may be used as stand-by fire equipment, and for whitewashing and machinery cleaning. East of the Rockies, write to Dept. 27, Lansing, 4, Mich.; west of the Rockies, to Dept. 105, Bean-Cutler Div., San Jose, Calif.

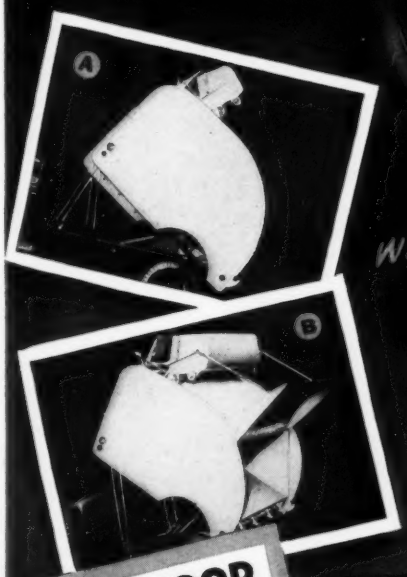
Save Lives With Safe Lighting

672 The Street & Traffic Safety Lighting Bureau, 155 E. 44 St., New York, N. Y., will mail you a copy of its publication *Evidence*—a detailed dissertation that will help you sell traffic safety to your municipality.

EFFICIENCY Means ECONOMY



with the Gar Wood BUCKET LOADER



The modern design and appearance of the Gar Wood Bucket Loader is winning enthusiastic approval of municipal and private operators nationally. For here is an inexpensive, all-enclosed sanitary unit that handles wet garbage, ashes and other non-compressible refuse efficiently and economically.

Simple loading operation. The loading bucket, filled at a low level, travels to top of body as body is raised and dumps its contents into receiving hatch, the cover of which automatically opens and closes.

The full opening tailgate permits complete discharge of load and body. Interior is accessible for flushing and cleaning.

Contact your nearest Gar Wood Branch or Distributor for further information and ask for Bulletin No. BL 1.

GAR WOOD INDUSTRIES, INC.

Hoist and Body Division

WAYNE, MICHIGAN

GAR WOOD GW TRADE MARK INDUSTRIES

Also Builders of: WINCHES & CRANES . . . TANKS & FLUSHERS . . . ROAD MACHINERY . . . DITCHERS & SHOVELS . . . HEATING UNITS . . . MOTOR BOATS

Are Catchbasins STREETS *or* SEWERS

Not long ago
we were talking
with a certain prominent
city official
in charge of sewers.
He said
that one annoying problem
his city had
was that of deciding
whether catchbasins
were part of the Street
and under the Street Department
or part of the sewers.

His experience isn't unusual.
A good water superintendent
frequently has to cooperate
with the Street Department
the Fire Department,
the Police Department,
the city engineer,
the planning commission,
the city attorney,
as well as the mayor's office
and the city council,
and he realizes that he should know
something about each.
Other municipal functions
have to do just as thorough
a job of cooperation
in order to produce
a smooth-running city.

And that is exactly the reason
that THE AMERICAN CITY
fits the needs
of the conscientious
city official
so well.
It not only gives him
authoritative data
in his particular field,
but helps him keep in touch
with good practice
in the balance of his
municipal government.

The American City

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A check or money order for $3 will bring it to you for a year.

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No Swimming Allowed

Sewage causes stream pollution... Today stream pollution is receiving more stringent attention by authorities everywhere.

One sure, easy way to end the danger of spreading harmful bacteria thru such pollution is to use Solvay Liquid Chlorine. It's the standard treatment for sewage-polluted water.

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Alkalies and Chemical Products Manufactured by The Solvay Process Company

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when you need chlorine

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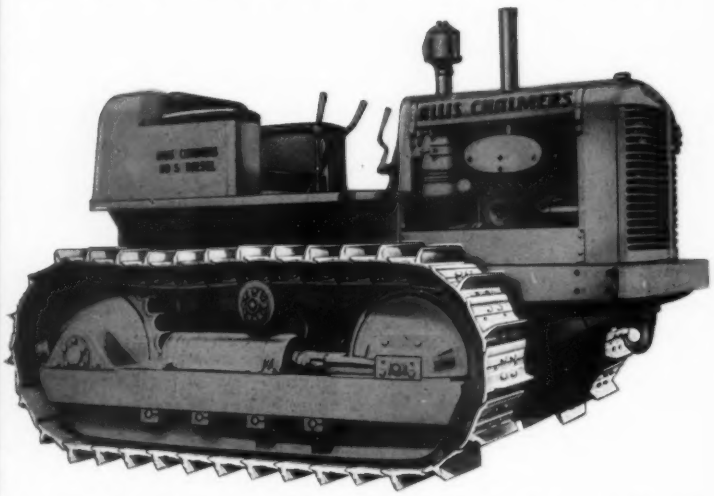
LIQUID CHLORINE

Knowledge Experience Cooperation

BUILT A GREAT ALLIED LINE FOR A GREAT TRACTOR



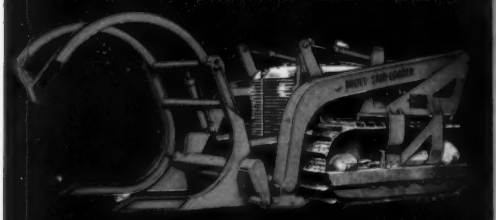
New Allis-Chalmers HD-5 and Its Allied Equipment Match Fully and Completely

- Result of finest kind of cooperation between the various Allied manufacturers and the entire Allis-Chalmers organization, its dealers and users.
- Backed by the knowledge, experience, and facilities of each manufacturer . . . each skilled in his own field . . . each firmly established in his own right.
- Specialized design and engineering. Allied equipment was developed and tested along with the HD-5 . . . made to fit exactly and to perform with maximum efficiency.
- Both tractor and equipment sold and serviced by the same organization — exclusively by Allis-Chalmers dealers throughout the country.

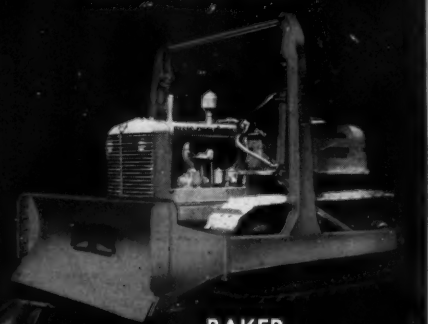
Yes, the HD-5 with any Allied unit is a fully matched power package . . . matched for greater output at lower cost.

RUGGED! TOUGH! DEPENDABLE!

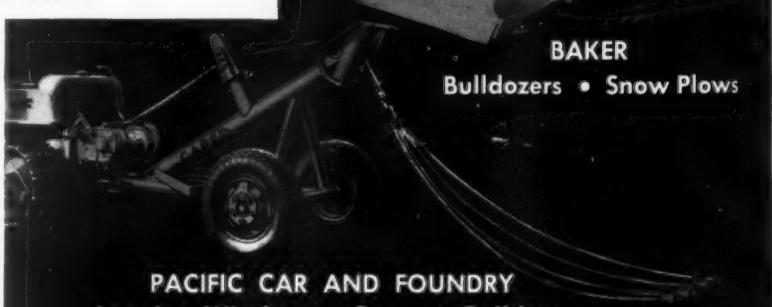
TRACTOMOTIVE Front-end Shovels



DROTT Skid-Loader



BAKER
Bulldozers • Snow Plows

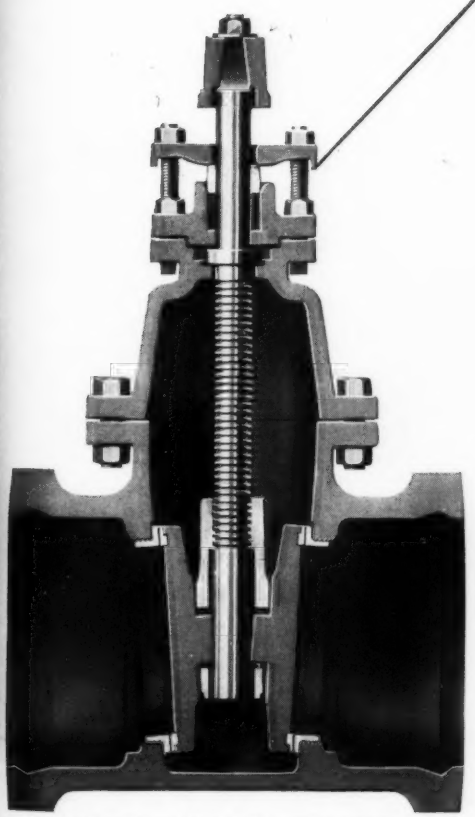


PACIFIC CAR AND FOUNDRY
Logging Winches • Carts • Bulldozers

GAR WOOD Bulldozers • Scrapers • Winches

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

SYMBOL OF RELIABILITY



- High-strength cast iron, fully bronze mounted.
- Rigidly inspected, fully tested to 300 lbs. hydrostatic pressure.
- Conforming to A.W.W.A. specifications.
- Sizes from 2" to 30"

On a gate valve, the initials "RDW" do more than identify a great product; they inspire confidence—and when you deep-bury a mechanism like a gate valve, you need confidence.

R. D. Wood Gate Valves are simplicity to the *n*th degree, consisting of only 3 internal parts—a spreader and two discs, or gates. In opening, the spreader clears the gates of their seats; in closing, it presses from the center, putting them in position without distortion. Revolving freely on their trunnions as they move up and down, the gates are not subject to wear at any one place. Nothing to obstruct full flow. No pockets to collect sediment or scale.

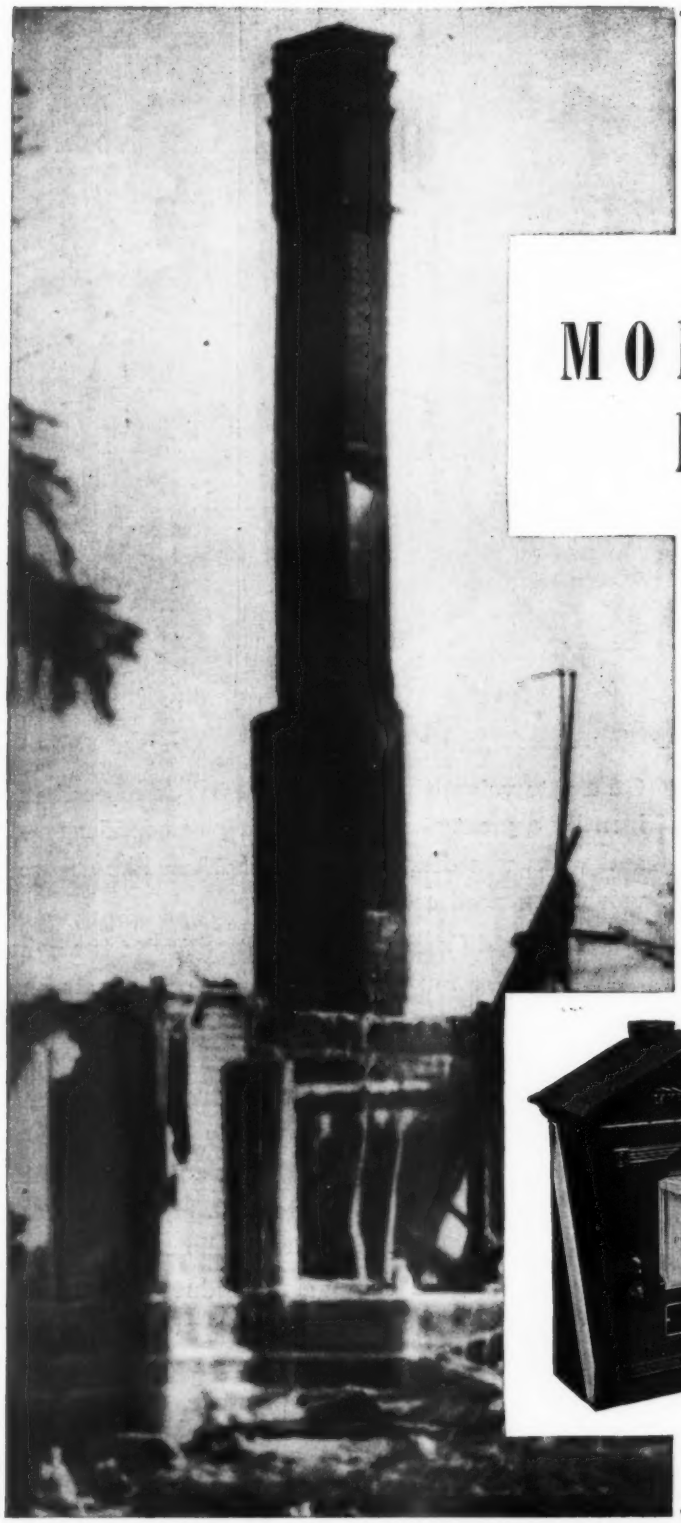
Like their famed companion-product—Mathews Hydrants—these gate valves have proved themselves from 'way back under the most varied conditions, and often after long periods of idleness. Depend on an "RDW" for service when you need it most. Give your community the extra protection of R. D. Wood Gate Valves.

R. D. WOOD COMPANY

Public Ledger Bldg., Independence Square, Philadelphia 5, Pa.

Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (Centrifugally Cast in Sand Molds)

XUM



A MONUMENT TO NEGLECT

Fire Destroys Property

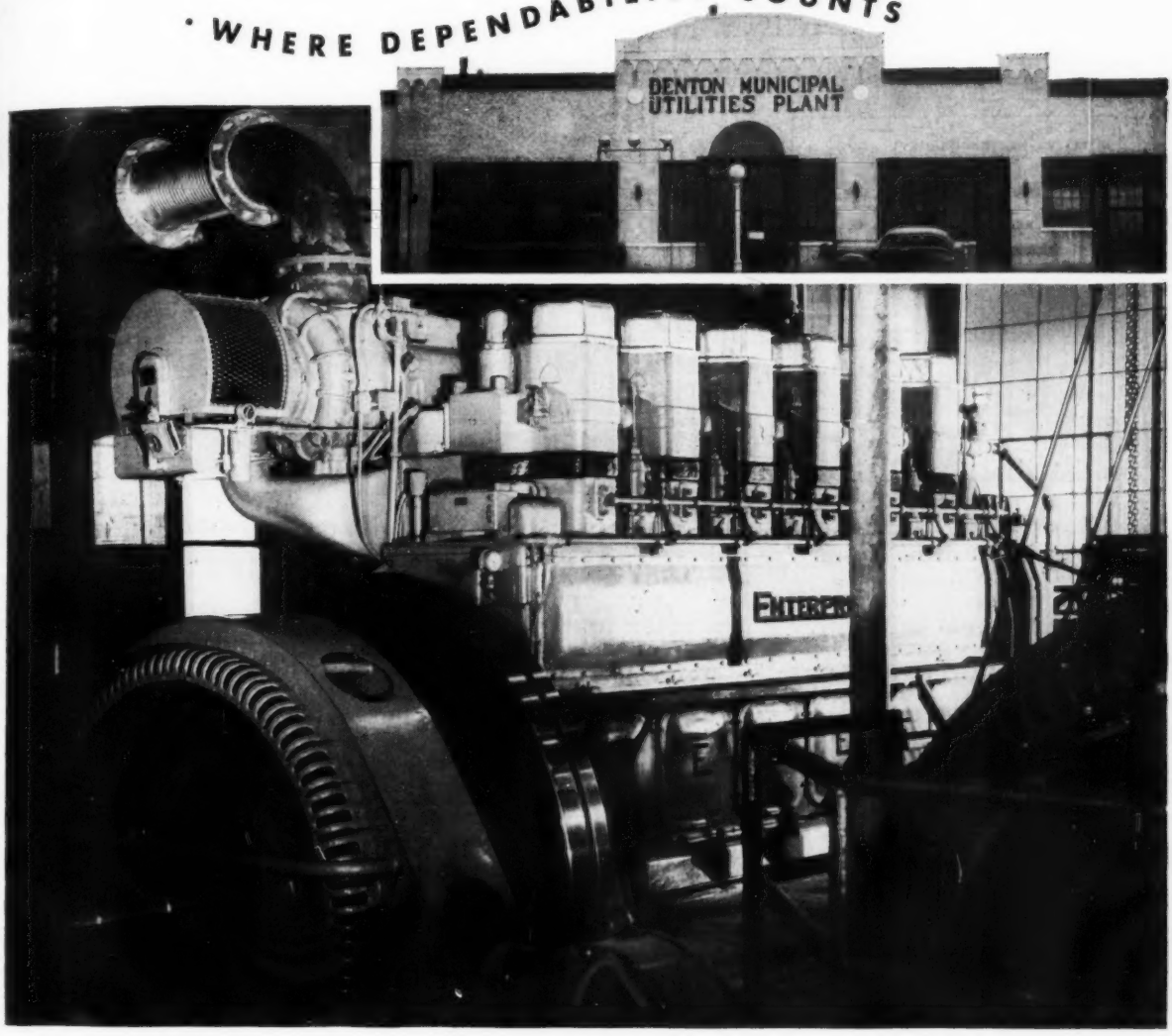
When property is destroyed by Fire, the community and everyone in it loses — Yet the community may protect itself against loss of wealth — and income — by keeping the fire losses low. There will always be fires — the problem is to extinguish them while they are small.

YOU Can Help

By urging your city government to provide adequate fire alarm box distribution. Prompt alarms reduce the fire loss and protect income.

THE GAMEWELL COMPANY
NEWTON UPPER FALLS 64, MASSACHUSETTS
IN CANADA: NORTHERN ELECTRIC COMPANY, LTD., MONTREAL

· WHERE DEPENDABILITY COUNTS



YOU CAN *RELY* ON ENTERPRISE DIESELS

For Example, Denton, Texas—
...with its stable population of 20,000, swelled by another 10,000 in its two large colleges, has relied on Diesel power since 1928 for its complete electric light and power requirements. Less than a year ago, after 18 years of operation with up to eight engines of various other types, Denton installed its first Enterprise Diesel. Of great interest and importance to Denton municipal power officials is the fact that this Buchi supercharged Enterprise Diesel Model 800KW, 6 cylinder 16″ x 20″, rated 1200 HP at 327 RPM, is about one-third the size of any one of the other units previously installed, yet has approximately 20% greater power output! Found to be way out front in dependability, efficiency and economical operation during its rugged trial period of service, this Enterprise Diesel has set the pace for greatly improved power for Denton: *Another* Enterprise is soon to be installed—1142 KW, 8 cylinder 16″ x 20″ Buchi supercharged Diesel, rated 1600 HP at 327 RPM.

Plan now to investigate the proven worth of Enterprise Diesels for your particular requirements. Our experienced staff of Enterprise Engineers stands ready to accurately analyze your specific problems, to appraise your needs and to recommend units and accessories for unexcelled power service.

Write today for your free copy of the new 16-page booklet: "Enterprise Turbo-charging Multiplies Diesel Power."

ENTERPRISE *Diesels*

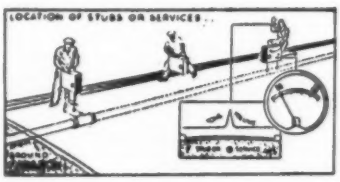
ENTERPRISE ENGINE & FOUNDRY CO.
SAN FRANCISCO 10, CALIF.
OFFICES IN PRINCIPAL CITIES

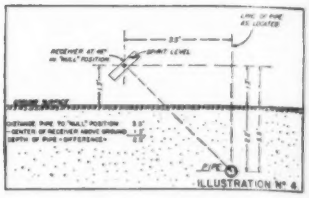
DIESEL ENGINES • PROCESS MACHINERY • OIL BURNERS • HEAVY MACHINERY

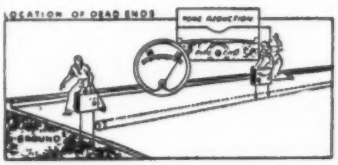
Buried Pipe and Cable Finder

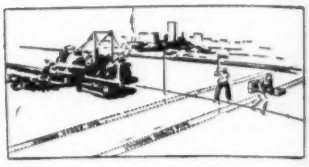
M-SCOPE

Water and Oil Leak Detector









The M-Scope is solving—successfully—the varied problems involved in the development, operation and maintenance of buried pipe and cable systems and is in daily use by representative organizations in such important groups as:

- MUNICIPALITIES
- GOVERNMENT PROJECTS
- SEWERAGE AND WATER PLANTS
- PUBLIC UTILITIES
- CONSULTING ENGINEERS
- AIRPORTS
- INDUSTRIAL PLANTS
- OIL AND PIPELINE COMPANIES

Free 16-Page Booklet Upon Request

FISHER RESEARCH LABORATORY, Inc. Palo Alto, California

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Joseph G. Pollard Co., Inc.

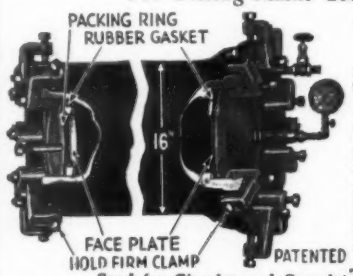
PIPE LINE EQUIPMENT

141 ASHLAND PLACE, BROOKLYN 1, NEW YORK

"HOLD FIRM"

A NEW TEST PLUG

For Testing Mains Conveying



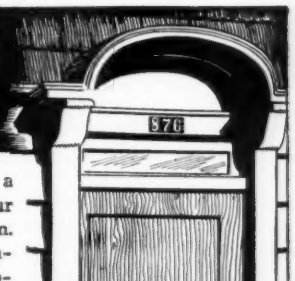
WATER GAS
OIL AIR

For testing cast iron, steel transite, soil and concrete pipelines, without the necessity of valves; test pipe as you lay them; eliminate open trench and hazards; special for testing reclaimed pipe, valves and fittings. Installed by any unskilled laborer; withstands 300 lbs. hydrostatic pressure, light in weight; same clamps fit many sizes of pipe. Made in all sizes. Used by the City of Chicago, contractors and municipalities.

Send for Circular and Complete Information

TEST PLUG MFG. CO. (not Inc.) SKOKIE, ILL.

PROPER HOUSE NUMBERING



There is a right and a wrong way to plan your house numbering program. Premax Stamped and Embossed Metal Numbers provide the necessary legibility.

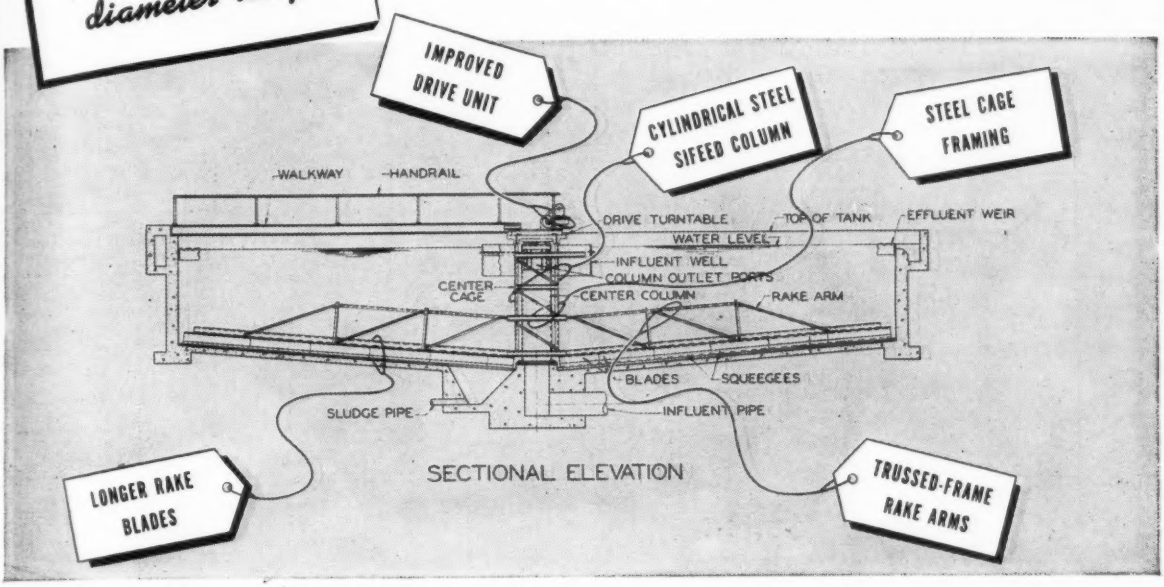
Premax Products

Division of Chisholm-Ryder Co., Inc. 3836 HIGHLAND AVE., NIAGARA FALLS, N.Y.

BUY all the Bonds you can . . . KEEP all the Bonds you buy
PROTECT YOUR FUTURE — Buy your EXTRA Bonds now!

An improved sedimentation unit in the 30′ to 100′ diameter range

The new S-7 DORR CLARIFIER



Embodying the following basic structural advantages over its predecessor, the new Dorr S-7 Clarifier is the most rugged and smoothly operating unit yet to be offered in the 30′ to 100′ diameter range.

These improvements are a typical example of the constant betterment of Dorr equipment. The Dorr S-7 adds greater strength and ruggedness to the traditional Dorr Clarifier design that has produced an enviable record of top operating efficiency for longer periods — *at lower costs.*

A Dorr engineer will gladly supply you with detailed information, without obligation.

1 CYLINDRICAL STEEL SIFEED COLUMN . . . eliminating the conical base previously used in 50′ to 100′ clarifiers and the concrete pier used in smaller units. Result — an uninterrupted influent flow combined with greater rigidity and strength of column.

2 TRUSSED-FRAME RAKE ARMS . . . providing wider support for rake blades, greater structural rigidity and eliminating tie rods and angle bracing.

3 LONGER RAKE BLADES throughout entire length of rake arm. Result — fewer blades needed for same raking capacity, greater structural rigidity and less chance of sludge bridging between blades.

4 STEEL CAGE FRAMING is used to support rake arms from turntable, which results in simpler erection.

5 IMPROVED DRIVE UNIT . . . stronger and simpler in construction, with double overload protection.

DORRCO

THE DORR COMPANY, ENGINEERS
570 LEXINGTON AVE., NEW YORK 22, N. Y.
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DENVER • LOS ANGELES
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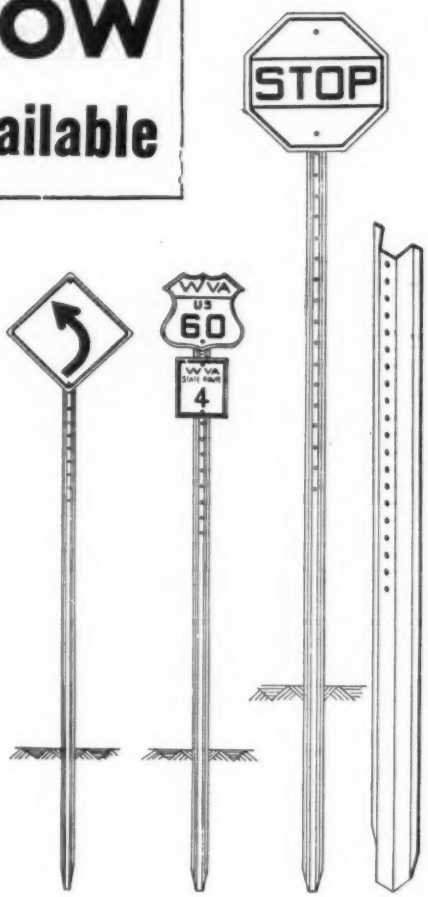
PETREE & DORR DIVISION, NEW YORK 22, N. Y.
ASSOCIATES AND REPRESENTATIVES
Dorr Technical Services and Equipment Are Also Available Through Associated Companies and Representatives in the Principal Cities of the World. Names and Addresses on Request.

DORR
RESEARCH ENGINEERING EQUIPMENT

NOW Available



Good signs should have good supports. HUNT Sign Posts are of consistently high quality—manufactured of rail steel for high tensile strength and finished with a glossy weather-resisting baked-on green enamel. Also available is a complete line of standard Stop, Warning and Reflectorized signs; also Street-Name and Portable Warning signs.

Write for Catalog and Prices, to Steel Products Division

THE HUNT COMPANY

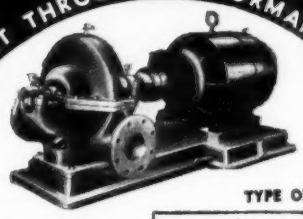
Established 1920

3700 W. McNichols Rd. Detroit 21, Mich.

Another Great PUMP "by Aurora"

WINS RESPECT THROUGH PERFORMANCE

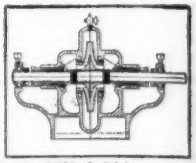
DOUBLE SUCTION



TYPE OD

AURORA CENTRIFUGALS *for Every Pumping Job*
HORIZONTAL SPLIT CASE *Single & Two Stage*
SIDE SUCTION
VERTICAL
NON CLOG
SUMP
MIXED FLOW
SPECIAL DESIGN
Write for CONDENSED CATALOG "M"
or
Consult SWEETS

AURORA HORIZONTALLY SPLIT CASE DOUBLE SUCTION SINGLE STAGE CENTRIFUGAL PUMPS



Available in capacities to 4,000 G.P.M. and heads to 300 ft., these accessible, compact, and lasting Type OD Pumps are widely used for general water supply, for municipalities, industrial plants, office buildings, institutions. Also for handling condenser circulating water, wash water, liquids in paper mills and distilleries, chemical solutions, oil in oil fields and refineries, irrigation, etc.

APCO TURBINE-TYPE PUMPS

Here's the Pump for "1001" duties. SIMPLE — only one moving part, the Impeller. Unsurpassed for low capacity, high head duties. Slight change in capacity against drastic head variations.

DISTRIBUTORS IN PRINCIPAL CITIES

AURORA Always PUMPS

AURORA PUMP COMPANY

66 Loucks Street, AURORA, ILLINOIS

LEADITE

FOR JOINTING CAST-IRON WATER MAINS

Melted and Poured ***No Large Bell-holes to Dig***

Saves at Least 75%

Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years • Leadite joints improve with age.

Be sure it is Leadite and accept no imitations

THE LEADITE COMPANY

Guard Trust Co. Bldg., Philadelphia 2, Pa.

No Caulking

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(Since 1915)

SPECIALISTS IN CEMENT GUN WORK

RESERVOIR LININGS (NEW AND OLD) • CONCRETE AND MASONRY REPAIRS • STEEL ENCASEMENT • FIREPROOFING • STEEL COAL BUNKER, STACK, HOPPER, AND PLATE LINING • SEWER LINING AND REPAIRING • CANAL, DITCH, AND DRAIN LINING.

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DISTRICT BRANCH OFFICE: 228 N. LA SALLE ST., CHICAGO 1, ILL.

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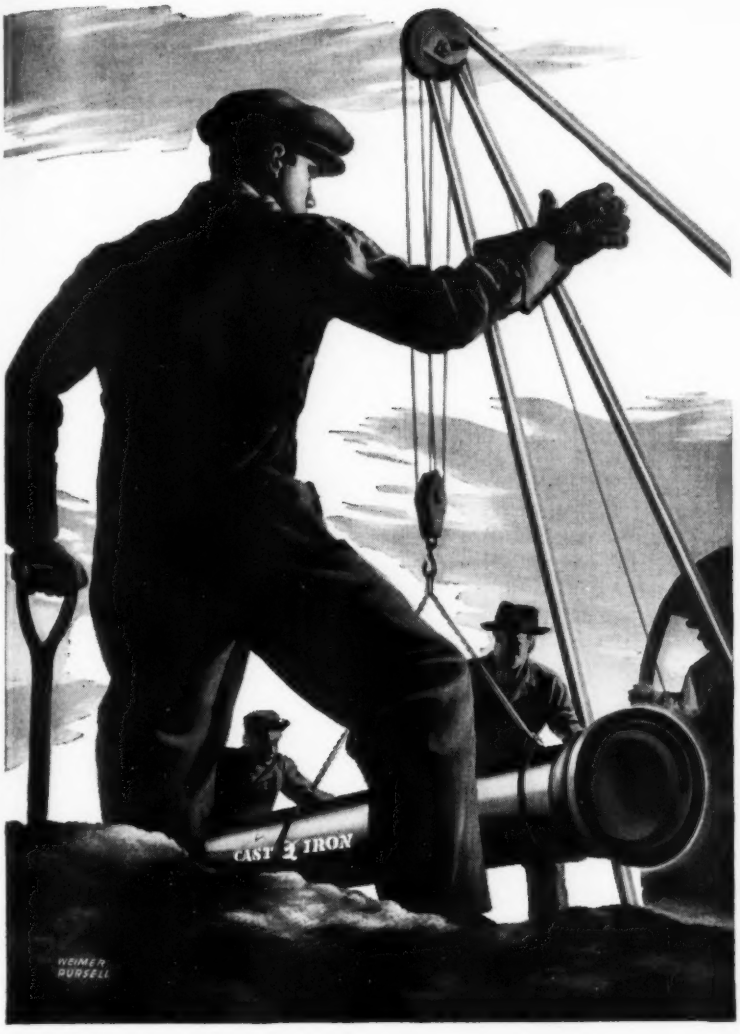

HOW can a ton of water (240 gallons) be collected, processed and delivered to the faucet, for less than a dime?

Because public water supply is a big industry—seven times bigger in tonnage volume than the combined product of all other industries—delivering an indispensable product without a substitute. This is part of the reason but not the big part.

More than half of the capital investment of public water supply systems in this country is in distribution mains, usually financed by bond issues with an average term of 30 years.

If these mains had to be dug up and replaced every 30 years—either because of failure or ruinous maintenance costs—water could *not* be sold for anything like a dime a ton.

But over 95% of all the water distribution mains in this country are cast iron mains with a known efficient life of at least 4 times the average term of an issue of water works bonds.

Cast iron mains go on serving for generations after the bonds issued to pay for them are retired and forgotten—saving millions in avoided replacement costs and millions in maintenance. A big reason why a ton of pure water costs less than a dime is the long life and efficient life of cast iron pipe. Cast Iron Pipe Research Association, T. F. Wolfe, Engineer, 122 S. Michigan Avenue, Chicago 3.

CAST IRON PIPE
SERVES FOR CENTURIES

LOOK FOR THIS MARK IT IDENTIFIES CAST IRON PIPE

for better management and engineering

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THE STORY of the modern aerial survey is, to a unique degree, the story of an organization: Fairchild Aerial Surveys, Inc. From the beginning and on through the intricacies of the development of the science of photogrammetry, Fairchild has always played the leading role... gaining a wealth of practical "know-how," so valuable to any engineer needing accurate information in the shortest possible time. Use the Fairchild consultation service when planning a survey...

For Industry, Commerce and Public Works

Since 1920, Fairchild has served clients the world over ... conducting domestic and expeditionary surveys in the fields of:

Petroleum	Highways	Taxation
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Waterways	Pipe Lines	Legal Evidence

Fairchild AERIAL SURVEYS, INC.

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HERSEY WATER METER

of today reflects the attainment of more than sixty years of experience, the progressive improvements of engineering skill, and the modern methods of the manufacturer.

HERSEY MANUFACTURING COMPANY

SOUTH BOSTON, MASS.

BRANCH OFFICES: NEW YORK — PORTLAND, ORE. — PHILADELPHIA ATLANTA — DALLAS — CHICAGO SAN FRANCISCO — LOS ANGELES

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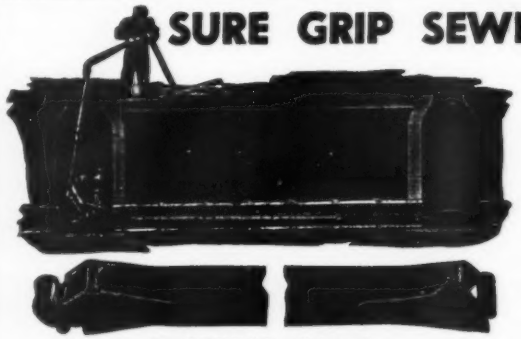
SURE GRIP SEWER RODS and ACCESSORIES



The REGULAR, a light rod,
Fir stock 1¼ x 1¼ inch square.

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.

The MASTER, a heavy duty rod,
Fir stock 1½ x 1½ inch square.

Write for catalog on complete line of sewer cleaning equipment.

EXPANDING SEWER MACHINE CO.
NAPPANEE, IND.

THE BEST NON-CORROSIVE AND ANTI-RUST COATING IN THE WORLD WILL FAIL UNLESS PROPERLY APPLIED

AS NATIONALLY APPROVED APPLICATORS OF SUCH MATERIALS AS ***NO-OX-ID***, ***BARRETT*** AND OTHER COATINGS WE COMBINE CRAFTSMANSHIP AND PRODUCT TO INSURE MAXIMUM PROTECTION ON—

STEEL STAND PIPES
ELEVATED WATER TANKS
WATER MAINS
PENSTOCKS
LOCK GATES
OTHER WATER WORKS INSTALLATIONS

BUILDING INSTALLATIONS

WHERE SURFACE OF PRESSURE AND GRAVITY TANKS, COOLING TOWERS, DEHUMIDIFIERS, AIR CONDITIONERS, ETC., REQUIRE TREATMENT OUR SERVICES ARE AVAILABLE.

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HAND STORAGE BATTERIES FOR MUNICIPALITIES

HAND storage batteries are heavy-duty batteries provided with heavy, hand-pasted tank-formed plates, heavy glass mats, acid and heat resisting micro-porous rubber separators, splash decks and genuine hard rubber containers. Built for use in Police Radio cars, Sanitation trucks, snow plows, sweepers, emergency trucks, ambulances, and fire apparatus.

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TRADE MARK REGISTERED

MARTIN CARRYHAUL TRAILERS
"Make Hauling A Pleasure!"

Ease of loading, dependability and economical operation are three Martin CARRYHAUL Trailer characteristics which make them the leaders in the field.
Regardless of your hauling job, there's a proper size Martin CARRYHAUL Trailer to do it for you safely and economically.

Your "CATERPILLAR" Dealer is your MARTIN Dealer. See him for your trailer needs.

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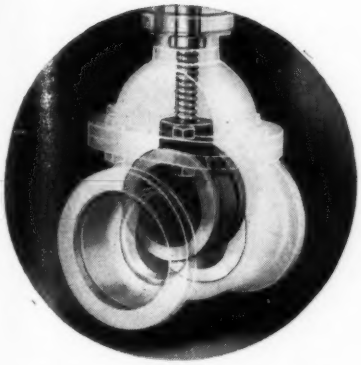
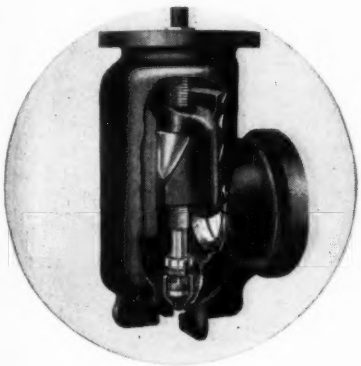


LUDLOW DOUBLE DISC GATE VALVES

The parallel seat, double wedge type slide gate valve, developed and perfected by Ludlow, provides a number of essential benefits. For instance:

- **Smooth, Positive Operation.** Gates positioned directly opposite ports before wedging, and entirely unwedged before being raised.
- **Positive Closure**—even after years of service in the open position; flexible-action gates self-adjusting to seats.
- **Self-Cleaning.** Rings cleaned throughout entire stroke. No internal guides to cause foul-up.
- **Ready Replacement of Parts.** Simple construction with ample tolerances, permitting ready replacement of parts.



LUDLOW FIRE HYDRANTS

Distinctive List 90. Design now serving in thousands of cities and towns. **No Ludlow Fire Hydrant has ever failed in line of duty!** Employs famous Slide Gate Feature and offers the following advantages:

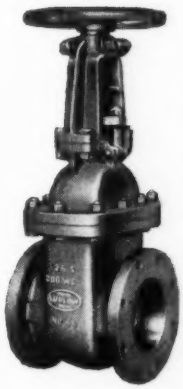
- **Quick Water** with least possible shock. Proper shut-off without water hammer.
- **Proper Drainage.** Hydrant automatically drained at lowest point when closed.
- **No flooding.** Accidental breaking of the hydrant, such as might result by collision from a heavy truck, will not cause flood since the gate when closed is wedge-locked.
- **Easy Inspection and Servicing** without unscrewing anything below the ground level. All working parts removed as one unit by lifting stem through top of hydrant.

LUDLOW EQUIPMENT

Proved by the Past—Fit for the Future

In the last analysis, the best indication of future service in water works equipment is its past record. Through the years—changing systems, higher pressures, lower budgets, wartime emergency—Ludlow Valves, Gates and Hydrants have served efficiently and faithfully. You may continue to rely on them for constant service, low upkeep, resistance to wear and fewer replacements. You may rely, too, on Ludlow engineers to consider your problems their own, making honest recommendations and giving accurate estimates.

Write today for full information



Outside Screw and Yoke Type

←Iron body, bronze mounted—tested at 350 lbs. hydrostatic pressure. List 44—sizes 2" to 12"—200 lbs. working pressure. List 66—sizes 14" to 48"—150 lbs. working pressure.

Iron body, bronze mounted—→ complying with latest A.W.W.A. Specifications. Tested at 300 lbs. hydrostatic pressure. Sizes 2" to 48".

A.W.W.A. Double Disc Gate Valve

←Iron body, bronze mounted—low pressure valves. List 3 Valves made in sizes 2" to 48" and can be furnished with Hub, Flanged, Universal, Spigot and Screwed Ends.

Valves shown with Hub Ends and without gearing. Also available with gearing or outside screw and yoke—and flanged ends.

←Hydraulic Cylinder, iron body, bronze mounted—manufactured in all sizes for any desired test or working pressures. Can be operated by four-way cocks or remotely controlled by solenoid valves.

Flanged End Standard Gate Valve with Cast Iron Bronze Lined Hydraulic Cylinder.

The LUDLOW VALVE MFG·CO·INC· SINCE 1866 TROY·N·Y·

CHAPMAN

Standard Sluice Gates

Eliminate Installation Problems

Chapman Standard Sluice Gates are easy to install because their interchangeable stems and couplings require no match-marking. They may be obtained with any type of operating control—manual, hydraulic cylinder or motor unit (completely enclosed in weatherproof housing, and delivered wired—ready for installation) Send for a copy of Chapman's Sluice Gate Handbook for complete information.

THE CHAPMAN VALVE MFG. CO.

INDIAN ORCHARD, MASSACHUSETTS

Transite asbestos-cement sewer pipe cuts infiltration to a minimum... reduces sewage treatment costs. Here's how:

(1) Sleeve-type joints make up tight . . . *stay* tight in service.

(2) Long 13-foot lengths result in fewer joints in the finished line.

Thus, *tighter* joints and *fewer* joints provide a double safeguard against infiltration. In turn, the load on the treatment plant is reduced... treatment costs are kept low. And, equally important, plant capacity is conserved for tomorrow's needs.

Other money-saving Transite advantages:

More Economical Installation—because Transite's light weight and long lengths make it easier to lay this pipe to line and grade.

Flatter Grades—Transite's high flow capacity (n=.010) often permits shallower trenches and correspondingly lower excavation costs... especially important in the case of rock excavation or wet trenches.

Smaller Diameter Pipe—an alternate economy to flatter grades which the designer may take advantage of when deep trenches present no serious installation problems.

High Corrosion Resistance—because of Transite's non-metallic structure that combats corrosion inside, outside and all the way through.

For all the facts, write for the Transite Sewer Pipe brochure. Address Johns-Manville, Box 290, New York 16, New York.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville TRANSITE SEWER PIPE

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BEAN ROYAL

Protect your shade trees with this rugged powerful BEAN ROYAL PARK SPRAYER. Also keep down weeds on golf courses and other areas with the BEAN ALL-PURPOSE SPRAYER. Write for catalog and full information.

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Division Food Machinery Corporation
Dept. 27, Lansing, Michigan
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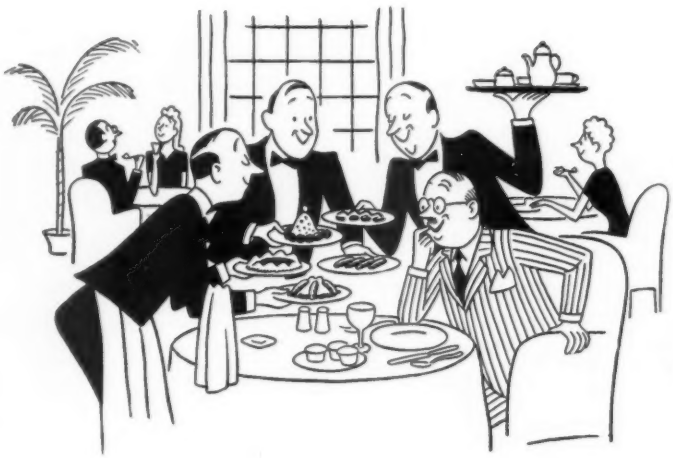
Eenie . . . . meenie . . . . minie . . . . mo . . . .



IT DOESN'T matter which dish you select at a Statler Hotel. They're *all* delicious!

In addition to superb food, you'll find large, oh-so-comfortable rooms . . . efficient, friendly service . . . the sincere warmth of Statler hospitality.

At moderate rates.

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NEW YORK (Hotel Pennsylvania)
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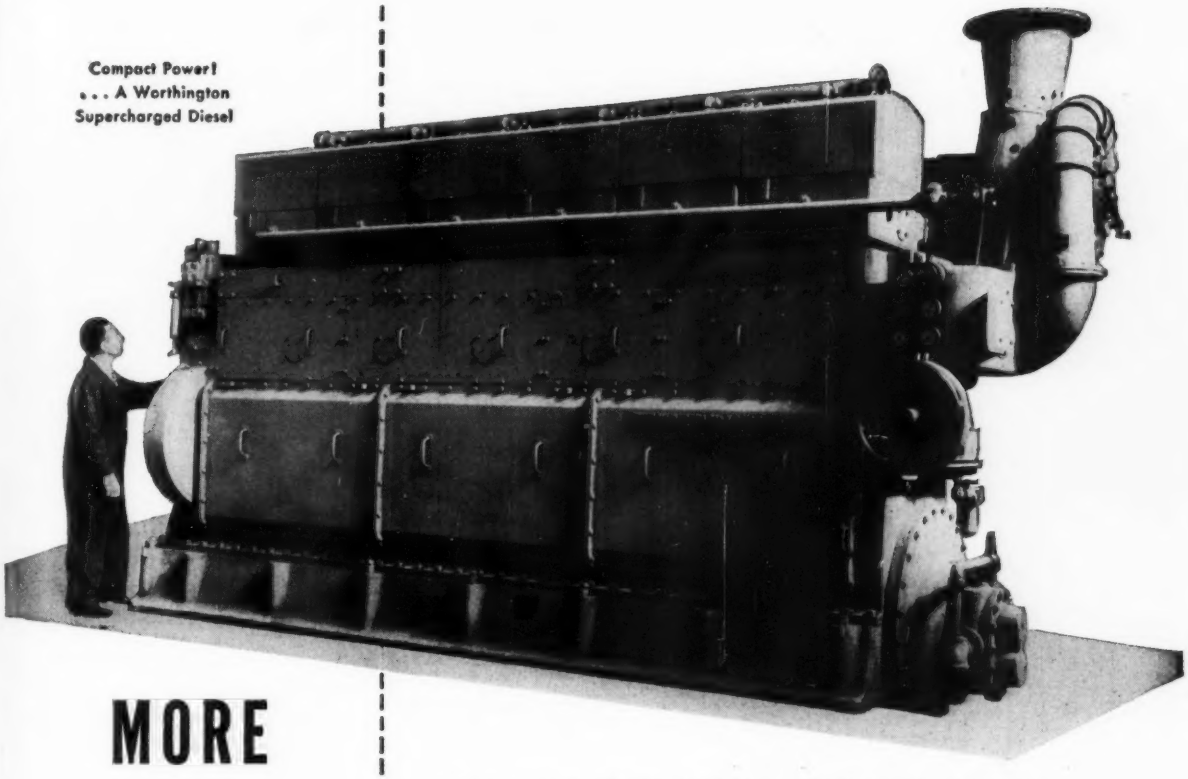
Compact Power!
. . . A Worthington
Supercharged Diesel



MORE

KILOWATT HOURS

PER GALLON

OF FUEL OIL

LESS

INSTALLATION

MAINTENANCE

AND LUBRICATION

COSTS

. . . with Worthington 4-cycle Supercharged Diesels

In a tropical climate, furnishing electricity for motor-driven refrigeration compressors is one of the toughest engine-jobs going — calling for completely dependable, uninterrupted output. That's why the following record of a Typical Worthington Diesel installation for a big Central-American refrigeration plant is of vital interest to every power user. At the end of 34 months of continuous operation, three Worthington SDD-6 Diesels (500 kw. supercharged) produced these results:

Hours of operation, combined	43,764
Average kilowatt hours per year, combined	4,993,633
Running-engine-capacity factor	64.7%
Average kilowatt hours per gallon of fuel oil	14.08
Total Annual maintenance cost per engine H.P.	33.8 cents

Here's 10% to 15% more kilowatt hours per gallon of fuel oil, with minimum upkeep and replacement costs! Then there's 25% lower lubricating oil consumption . . . big reductions in building space, foundation materials and installation labor . . . adding up to tops in Diesel efficiency, with savings all along the line!

Today, Worthington installations of like capacity supply entire communities with electricity, while all over the world Worthington Diesels meet industry's needs for continuous, trouble-free, economical power.

Write for details . . . and further proof that *there's more worth in Worthington. Worthington Pump and Machinery Corporation, Engine Division, Buffalo, N. Y.*

WORTHINGTON

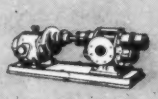
K7-2

YOUR PARTNER IN POWER PROGRESS

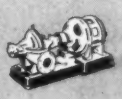
Diesel engines, 150 to 3,290 hp . . . gas engines, 175 to 3,500 hp . . . dual fuel engines, 150 to 3,290 hp.

WORTHINGTON-BUILT AUXILIARIES

Air King Compressors



Oil Transfer Pumps



Cooling Water Circulating Pumps

Evaporative Type Engine Water Cooler

IBM Equipment Provides Improved Public Services

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Through the use of IBM Electric Punched Card Accounting Machines, reports by departments and divisions are obtained immediately following the close of any accounting period. Up-to-the-minute information is provided on which administrative action can be taken in order to keep within the budget allotments.

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An important IBM development is mark sensing—a process in which cards are prepared automatically by electronic machines that sense the positions of pencil marks and punch corresponding holes; these holes, in turn, automatically produce required reports.

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TIME RECORDERS AND ELECTRIC TIME SYSTEMS

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NEW CONCEPT BRINGS IMPROVED METHOD OF SEWAGE AND WASTE TREATMENT

Bio-Activation*

Phantom view of typical Bio-Activation plant

PROVIDES COMPLETE, MORE EFFICIENT, MORE ECONOMICAL TREATMENT... ELIMINATES COSTLY, TROUBLESOME UPSETS

The AMERICAN *Bio-Activation** system utilizes the best qualities of trickling filters and the activated sludge process . . . combines and integrates them by an exclusive method so that they work together to achieve a superior result under all conditions. In *Bio-Activation*, usual primary treatment is employed, followed by high capacity filters and short period intermediate sedimentation. Here, initial high removals of B.O.D. are obtained before sewage is passed to aeration tanks where activated sludge is developed. Because of the intermediate filter treatment which considerably reduces the strength of the primary effluent, the liquor can be readily handled by the activated sludge process *without the usual upsets caused by exceptional conditions and shock loads.*

The advantages of this system assure a completely stable, final effluent which contains nitrates and is low in B.O.D. and suspended solids. Several alternative flow plans to meet various conditions are available. *Send for Bio-Activation Bulletin No. 259.*

Low-Cost Conversion of Existing Plants Can Double Capacity

Conversion of a straight trickling filter or activated sludge plant to *Bio-Activation* is easy and economical. Doubles the plant capacity, lowers operating cost, requires less laboratory control.

BIO-ACTIVATION Gives You:

The most modern developments in sewage treating methods and equipment
NO HIGHER construction cost
LOWER operating expense
SIMPLER laboratory control
GREATER ease of operation
MORE rugged and dependable service
INCREASED stability and efficiency

LIST OF INSTALLATIONS GLADLY FURNISHED ON REQUEST

** Process Patented by American Well Works*

Typical Average Monthly Results

Point of Sampling	5-Day BOD	Suspended Solids
Raw Waste	342	370
Primary Effluent	235	134
Influent to Filter	510	.....
Filter Effluent	99	143
Intermediate Effluent	58	65
% Reduction Filter Influent through Intermediate Effluent	89.5	.....
Final Effluent	13	15
% Overall Removal	97.5	96

ENGINEERING SERVICE

Our staff of Sanitary Engineers is well qualified to cooperate with consulting and operating engineers in suggesting the process of treatment and type of equipment best suited to individual needs. Inquiries on new installations or improvements in existing plants will receive prompt attention.

AMERICAN WELL WORKS

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AURORA, ILLINOIS

AMERICAN Est. 1868

Pumping, Sewage Treatment, and Water Purification Equipment
RESEARCH · ENGINEERING · MANUFACTURING

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ADVANTAGES OF PRESTRESSED CONCRETE CYLINDER PIPE • NO. 4

Maximum use of local labor and materials...

• The installation of Prestressed Concrete Cylinder Pipe offers no exception to the Lock Joint Pipe Company's general practice of setting up temporary manufacturing plants near the location of projects—and using a maximum of local labor and local materials.

All necessary equipment for the manufacture of this high head pipe is transported to the temporary plant where the cylinder is fabricated, tested and lined with a substantial thickness of concrete. After a proper curing period, the lined cylinder is tension wrapped with high tensile wire and protected from corrosion by a mortar coating.

Experience on major installations in various parts of the country has proven that Lock Joint Prestressed Concrete Cylinder Pipe offers many important advantages — higher pressures in a greater range of sizes, increased elasticity, minimum weight, excellent performance and maximum water-tightness. You can profit by this experience if you consult us on all your pipeline problems.

A Hazen-Williams Hydraulic Slide Rule will gladly be sent upon request with our compliments.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

LOCK JOINT PIPE COMPANY
Established 1905
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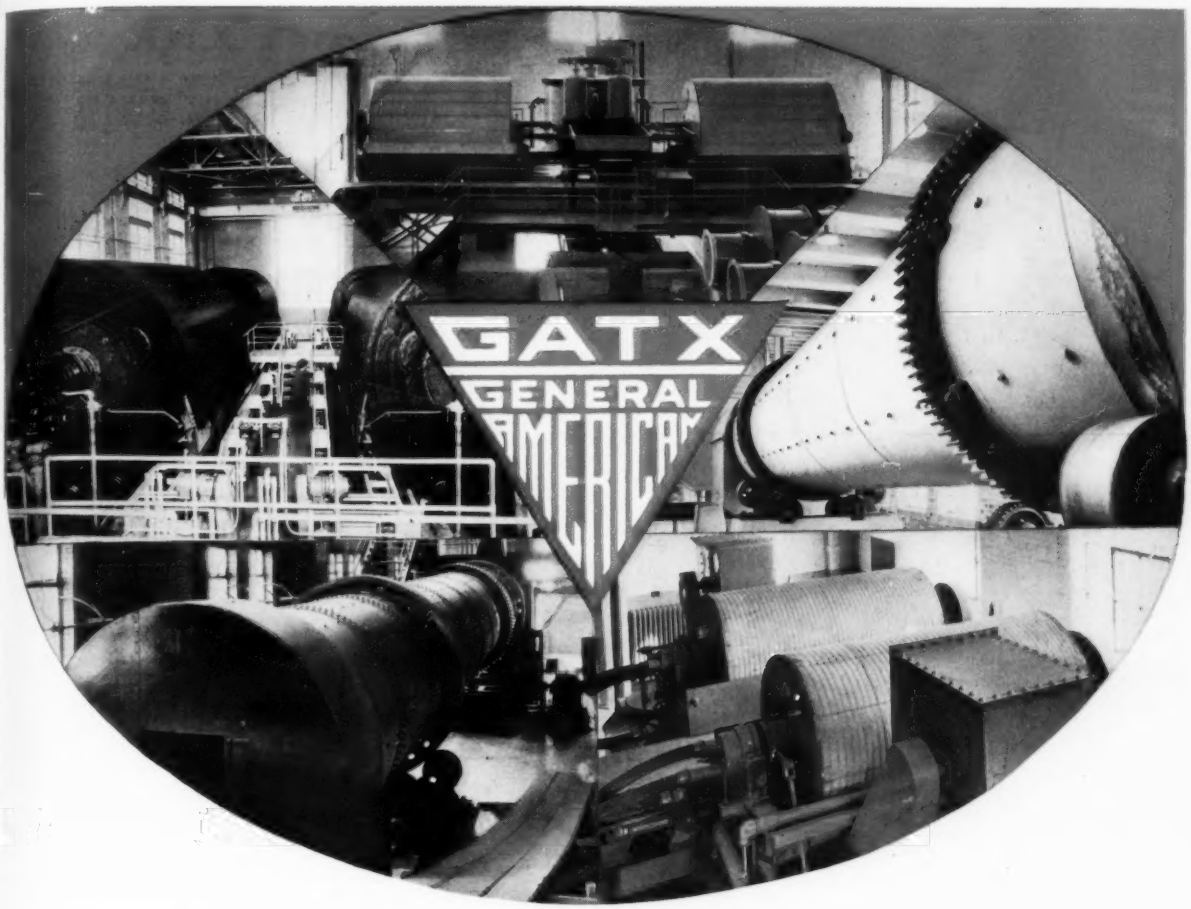
Denver, Colo. · Chicago, Ill. · Kenilworth, N. J. · Kansas City, Mo. · Rock Island, Ill.
Joplin, Mo. · Valley Park, Mo. · Cleveland, Ohio · Hartford, Conn. · Navarre, Ohio

SCOPE OF SERVICES *Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous lines.*



Modern Sewage Treatment Plants

require equipment that has proved itself efficient and is backed by individual responsibility for design, engineering, fabrication and initial operation.

General American Conkey Sludge Filters—the first to be used for large scale dewatering of sludges such as primary, elutriated-digested, Guggenheim Process, etc.—are dewatering more than a thousand tons of dry solids daily.

General American Louisville Dryers have been successfully used for years drying both activated and digested sludges. Type "L", with patented fire-conduits to eliminate scorching or burning, produces a uniformly high quality maximum yield of dried product for fertilizer or earth conditioner.

Let the experience and knowledge of General American engineers help you while your plans are in the blue print stage.

★ ★ ★ ★ ★

OTHER GENERAL AMERICAN EQUIPMENT

SCREENING DRYERS
SLUDGE GAS HOLDERS
GARBAGE DRYERS
HYDROSEPARATORS
STORAGE TANKS
WATER TANKS
TURBO-MIXERS
THICKENERS
STEEL-ALLOY PLATEWORK
STEEL STACKS

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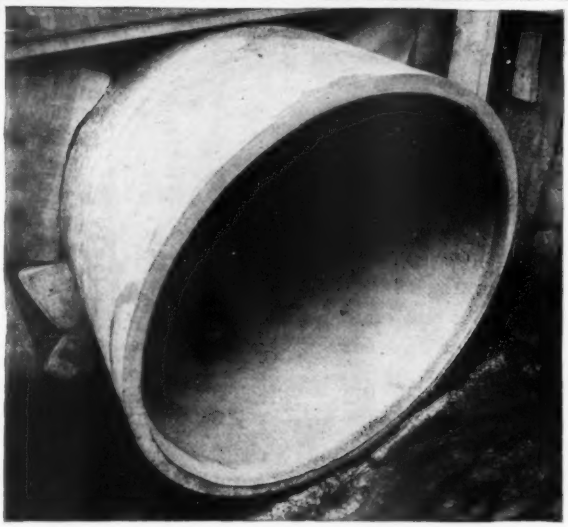
GATX GENERAL AMERICAN

CENTRILINE GOES TO WASHINGTON ...for the third time!



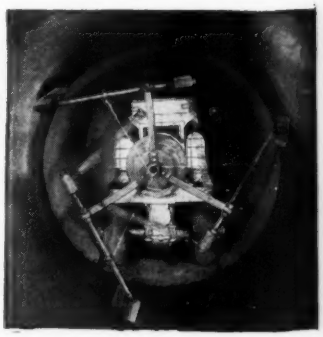
ONCE again Centriline was elected to service the nation's capital—and do another important reconditioning job for the Water Department of the District of Columbia. Nearly 30,000 feet of cast-iron pipe, varying in sizes from 30″ to 48″, were cleaned and cement lined—speedily and economically. This sleek new lining will provide a non-corrosive, non-tuberculating surface to shield the underlying metal—assuring a permanently high coefficient and increased longevity.

CENTRILINE CORPORATION

140 CEDAR STREET • NEW YORK 6, N. Y.

Restores and Protects Pipe-Line Carrying Capacity

The Centriline process is a rapid, economical method of reconditioning pipe lines 30" and larger. After cleaning, a thoroughly premixed cement mortar lining of desired thickness is applied centrifugally without rebound. This dense quality product is mechanically trowelled to a smooth finish providing maximum carrying capacity which is permanently sustained. This work is performed underground, in place.



"They are the last word in fire apparatus", — says Chief John Williams.

ELKHART, IND. receives first new AMERICAN-LAFRANCE Pumpers

TWO 1250 GALLON CAB-AHEAD-OF-ENGINE PUMPERS GET ENTHUSIASTIC RECEPTION

From the moment of arrival in Elkhart, city officials and a host of fire fans displayed increasing interest and enthusiasm in the first post-war design models to be delivered to a municipality.

At the Underwriters acceptance tests, Chief Williams was host for over two hundred out of town fire Chiefs and fire department members. Such is the wide spread interest in these new American-LaFrance pumpers.

The full vision—short turning radius—easy steering—stability — efficient braking — simplified controls — added seating capacity—large load capacity—added equipment storage space—easy access to operating units for inspection and maintenance are features that make American-LaFrance the best buy for modernizing your fire department.

RECENT PUMPER DELIVERIES HAVE BEEN MADE TO:

Alma, Michigan
Altus, Okla.
Asheville, N. C.
Ashland, Ohio
Berwyn, Illinois
Berwyn, Pa.
Cedar City, Utah
Charleroi, Pa.
Claymont, Delaware
Coatesville, Pa.
Cresson, Pa.
Danbury, Conn.
Eastchester, N. Y.
Gainesville, Texas
Lincoln, Nebraska
Middletown, N. Y.
Northampton, Mass.
Passadena, Texas
St. Clair, Michigan
Springfield, Ohio
Topeka, Kansas

UNDERWRITERS ACCEPTANCE TEST MARCH 6, 1947

ALFCO

AMERICAN-LAFRANCE-FOAMITE CORPORATION
ELMIRA, NEW YORK, U. S. A.

LAFRANCE FIRE ENGINE AND FOAMITE LIMITED
TORONTO 9, ONTARIO, CANADA

PHOTOGRAPHS BY GLENN PARISH

SPREADS FORWARD AND BACKWARD

Fast Non-Stop Spreading

- Spreads all materials to 1", wet or dry
- Spreads thick or thin
- Attaches to truck as tailgate
- Does not limit use of truck to spreading
- Controlled from cab with clutch
- Starts spreading with truck in motion
- No helper required
- Stops spreading with truck in motion
- Spreads forward or backward
- Half or full width of street
- Reduces number trucks required
- Positive uniform spread
- Fits any dump truck

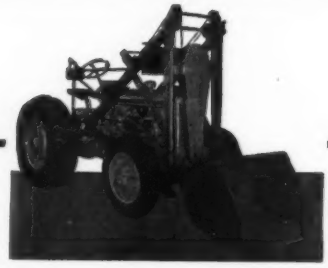
SELF-FEEDING FLINK

Flink Spreader with safety protective housing over spreader blades and clutch. Hydraulic drive and rear wheel chain drive models.

Re-surfacing is done with truck backing up to avoid damaging tires or leaving tracks on oil. Even, full width spread is obtained.

Write for literature or name of distributor near you.

THE FLINK COMPANY, Dept. 671, STREATOR, ILL.



⅝ Cu. Yd. — 8' Lift

FRONT END LOADERS

for Industrial Tractors

Elkhart — White Mfg. Co. — Indiana

NO "LEAN YEARS" FOR WEEDS!

Order Your Supply of Weed-Killer *NOW*

DOLGE WEED-KILLER

Does a swift, efficient job where *no vegetation whatever* is desired. This Dolge-developed preparation kills weed tops, then penetrates to the roots, destroying the plants completely. It sterilizes the soil and prevents seeds from sprouting.

An hour's sprinkling with DOLGE WEED-KILLER equals six hours of weeding by old-fashioned, unsatisfactory methods. Do the job once and do it *right* at a terrific saving of money.

E. W. T. *SELECTIVE* WEED-KILLER

Acts on weeds but is not injurious to most grasses, nor does it sterilize most soils. One cupful to eight gallons of water is the usual solution for ridding turf areas of dandelions, plantains and other hardy weeds.

Non-poisonous to humans and domestic animals . . . will not corrode metal sprinkling and spraying equipment. Use freely on roadsides to control poison ivy. Use for ragweed control.

Write for complete literature, with full directions for applying these tested Dolge products.

The C. B. DOLGE CO. WESTPORT, CONNECTICUT

Changed Your Address?

If so, and your copies of THE AMERICAN CITY are not reaching you, please mail this form to us at 470 4th Avenue, New York 16, N. Y. so that your stencil may be corrected.

Changed from .....

..... (former address)

Changed to .....

.....

..... (new address)

Name ..... (please print)

Position .....

FWDs GRADE ROADS FASTER AT LOWER COST

Equipped with underbody blade, an FWD four-wheel-drive truck is an outstanding road maintenance unit . . . fast, efficient, capable of patrolling great mileage at low cost. FWDs are engineered for this service, as well as for scores of other road construction and maintenance jobs. For more than 36 years they have proved that the true FWD four-wheel-drive principle, with center differential, gives them what it takes to be classed as the "ONE truck for MANY jobs" demanding the heaviest of heavy-duty performance in highway work, all year 'round.

See your nearest FWD Distributor, or write to . . .

THE FOUR WHEEL DRIVE AUTO CO.
CLINTONVILLE, WISCONSIN
Canadian Factory: KITCHENER, ONTARIO

America's FWD *Foremost Heavy-Duty Truck*

NOW!

The Finest Values in 40 Years of International Truck History

New INTERNATIONAL Trucks

For 16 years more heavy-duty International Trucks have served American commerce and industry than any other make.

Now come *new* KB Models—light-duty, medium-duty and heavy-duty—with gross vehicle weight ratings from 4,400 to 35,100 pounds. Note the designation—KB.

That means many features and improvements... new goals in engineering, research, and design... new styling with trim, flowing lines accented by gleaming chrome.

And that means rugged International stamina, long, trouble-free life, and ease and economy of operation in greater abundance than ever before.

Yes, KB Internationals are the finest trucks in 40 years of International Truck history. In the complete line is the right truck for every job. And back of every truck is service as great as the trucks themselves, supplied by the nation's largest company-owned truck service organization—International Branches—and thousands of International Dealers.

Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
180 N. Michigan Ave., Chicago 1, Illinois

THIS EMBLEM IDENTIFIES GREAT TRUCKS

INTERNATIONAL

Tune in James Melton on "Harvest of Stars" every Sunday! NBC Network. See newspaper for time and station.

INTERNATIONAL TRUCKS

A LARGER POWER UNIT for Sikeston—

Its Another Nordberg Diesel

1946

The latest addition to the generating equipment at Sikeston is this eight cylinder, 3200 horsepower Nordberg Diesel driving a 2250 K.W. flywheel type generator.

1935

The first Nordberg Diesel in the Sikeston municipal power plant was this five cylinder, 1250 horsepower unit with 870 K.W. generator.

The best proof of the service given by Nordberg Diesel engines is found in the many repeat orders from satisfied users. The latest installation in the municipal power plant at Sikeston, Missouri is typical of the long list of such users who continue to add Nordberg units because of the record these engines have established for dependable performance and low operating costs.

If you are in need of additional generating capacity, investigate the advantages of Nordberg Diesel power. A Nordberg engineer will gladly give you further particulars on Nordberg two and four-cycle engines in sizes up to 8500 horsepower for operation on oil or gas.

NORDBERG MFG. CO., MILWAUKEE 7, WIS.

NORDBERG MACHINERY

NORDBERG

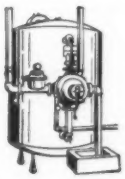
DIESEL ENGINES

NORDBERG MACHINERY

BRINGING the benefits of soft, iron-free water to your community will provide a real boost in popularity for your administration. And here's why:

Women know about the benefits of soft water . . . how it *saves soap and protects fabrics* from harsh soap curds—how it makes *dishes sparkle*—and how wonderful it is for *bathing and shampooing*. What's more, soft water saves money by cutting water supply maintenance expense, reducing plumbing repairs, and lowering fuel consumption costs.

Refinite equipment for water conditioning is *not expensive*. And it pays for itself by adding subscribers and by reducing maintenance costs.



Get all the details about soft water. Write today — there is no obligation.

Everything For the Swimming Pool

Remember—Refinite supplies equipment for swimming pools, as well as laboratory analysis and swimming pool control services. Ask for details.

The Refinite Corporation
Refinite Building Omaha, Nebraska

"REDI-MIX" *Special Zone and Traffic Line Paint*

INDUSTRIAL • MUNICIPAL • HIGHWAY

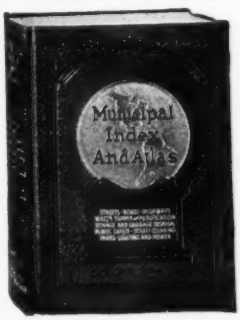
No Guesswork • No Valuable Loss of Time

"Redi-Mix" is ready to use in all types of traffic line markers as it comes in the container. It will not "pick-up" 20 minutes after application, in warm weather. Comparative tests justify the remarkable resistance of this traffic paint to abusive weather and traffic conditions.

Available in White or Yellow colors.
No delay in deliveries.

Write for prices and information.

A. J. SCHMIDT CO. Kiel, Wisconsin



"WHO'S WHO IN MUNICIPAL SUPPLY"

is an important feature of the THE MUNICIPAL INDEX consisting of brief messages to municipal officials from all the manufacturers, who are sufficently interested in governmental business to contribute a functional statement about what their products can do for city officials. If you do not have the latest Municipal Index on hand please let us know.

THE MUNICIPAL INDEX
470 Fourth Avenue New York 16, N. Y.

In
CLEVELAND
IT'S THE
HOLLENDEN

1000 ROOMS WITH BATH
RADIO IN EVERY ROOM
SIX FINE RESTAURANTS
CENTRAL DOWNTOWN LOCATION
GARAGE ATTACHED

JAMES J. FITZPATRICK
GENERAL MANAGER

some places they say...

"Spaghetti"*

...but everywhere they say...

"Modernize with Macks!"

*Send us unusual expressions used in *your* department.

In some fire departments "spaghetti" means the tangle of lines in use at "a real worker". But in over 1,000 departments the best in modern fire engines means Macks.

Mack firefighters have earned this reputation. They are designed by engineers who have pioneered such basic advances for fire apparatus as the two stage series-parallel centrifugal pump, four wheel brakes, left hand drive, power brakes, water-carrying pumpers, low chassis suspension, and inclosed bodies. When new improvements come out of the Mack research laboratories and pass many rigid tests, they are incorporated directly into Mack fire engines without waiting for new models.

What's more, these modern fire engines are backed by the greatest manufacturing experience and resources in the fire apparatus field... and by the skilled services of 67 direct factory branches, with a quick and constant availability of parts.

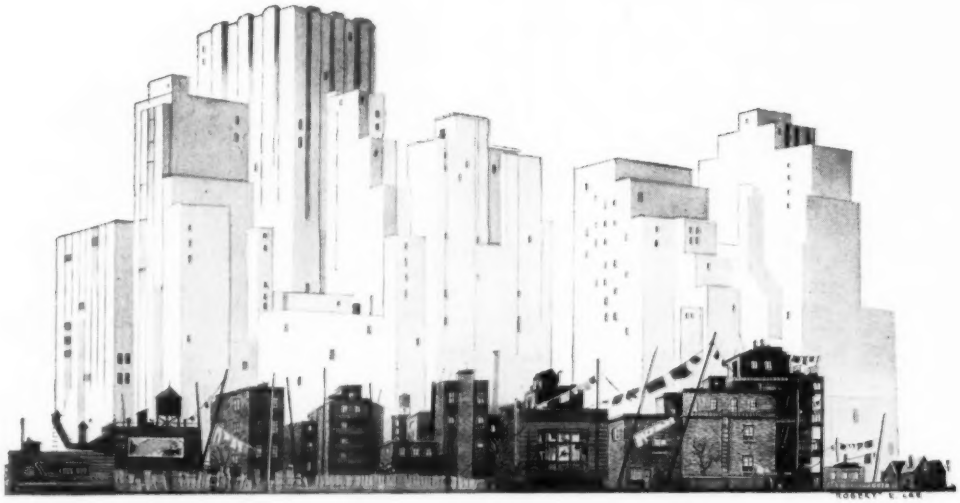
Now is the time to begin replacing your obsolete equipment. For fire apparatus that gives you the latest in up-to-the-minute design, *Modernize with Macks!*

Mack Type 85 750-gallon pumper recently delivered to Edge Hill Fire Company, North Hills, Pa.

MACK MANUFACTURING CORPORATION Fire Engine Division Long Island City 1, N. Y.

TRIPLE COMBINATION PUMPERS — 500 TO 1250 GALLONS • SQUAD WAGONS • CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

Mack FIRE APPARATUS



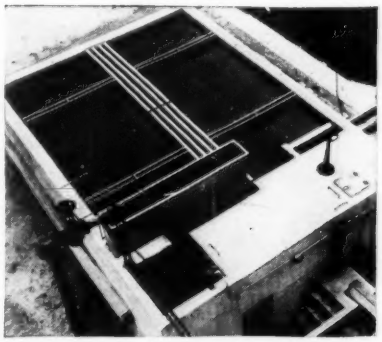
Where's the water going to come from?

FOR the housing development that is to rise on the slum clearance site . . . for the municipal swimming pools . . . the new industries—for the scores of demands soon to be made on the water supply of the postwar community, better water and, quite probably, *more* water is going to be needed.

The ideal water for industry and householder, of course, is soft . . . clear . . . iron-free. Permutit* equipment provides this kind of water. When space is at a premium, compact Spaulding Precipitators or Spiractors not only offer the most modern form of lime soda treatment, but cut space requirements to one half or even one *quarter* of older style water treatment plants.

Find out how Permutit can serve your community. Full particulars will be furnished gladly to you or your consultants. Write to The Permutit Company, Dept A-4, 330 West 42nd Street, New York 18, N. Y. or Permutit Co. of Canada, Ltd., Montreal.

*Trademark Reg. U. S. Pat. Off.



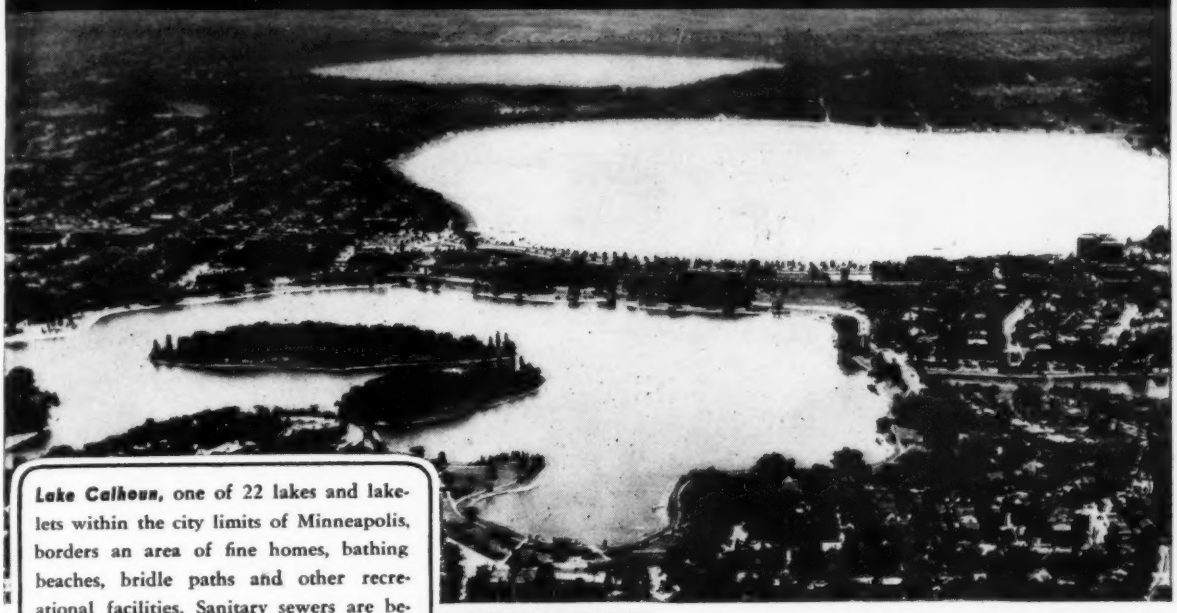
PERMUTIT SPAULDING PRECIPITATOR removes water hardness, dirt and color by the sludge blanket process. This new-design equipment cuts detention time, saves chemicals, takes only half the space of former methods. Present installations handle up to 120,000,000 gallons daily.

PERMUTIT

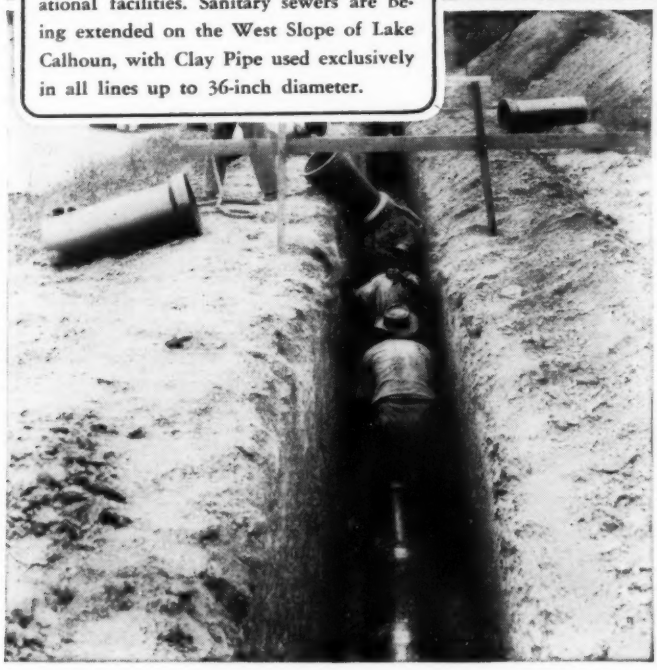
WATER CONDITIONING HEADQUARTERS

CLAY PIPE

GUARDS LAND VALUES—PUBLIC HEALTH AROUND BEAUTIFUL TWIN-CITY LAKES



Lake Calhoun, one of 22 lakes and lakelets within the city limits of Minneapolis, borders an area of fine homes, bathing beaches, bridle paths and other recreational facilities. Sanitary sewers are being extended on the West Slope of Lake Calhoun, with Clay Pipe used exclusively in all lines up to 36-inch diameter.



MINNEAPOLIS is increasing sanitary facilities with Clay Pipe in some of its finest residential sections. The installation of many miles of Vitrified Clay sewers in the famous Twin City is designed to protect the lakes from pollution for many decades. Land values of bordering residential lots, bathing beaches, playgrounds, etc. are greatly enhanced, now that the threat of water pollution is removed. Engineers who specified Clay Pipe for this modernization program wanted the *best!* They knew that high-quality, corrosion-proof Clay Pipe *never* wears out! It provides the greatest possible protection . . . assures long service and true economy.

Careful Construction is important in any pipeline installation! Note the flat, level trench-bottom here . . . straight sidewalls . . . well-made joints . . . careful handling. Combine this sort of construction with the long-wearing properties of Clay Pipe itself, and you have a sewer line that gives decades of dependable service!

For information about Clay Pipe, write to the office nearest you.

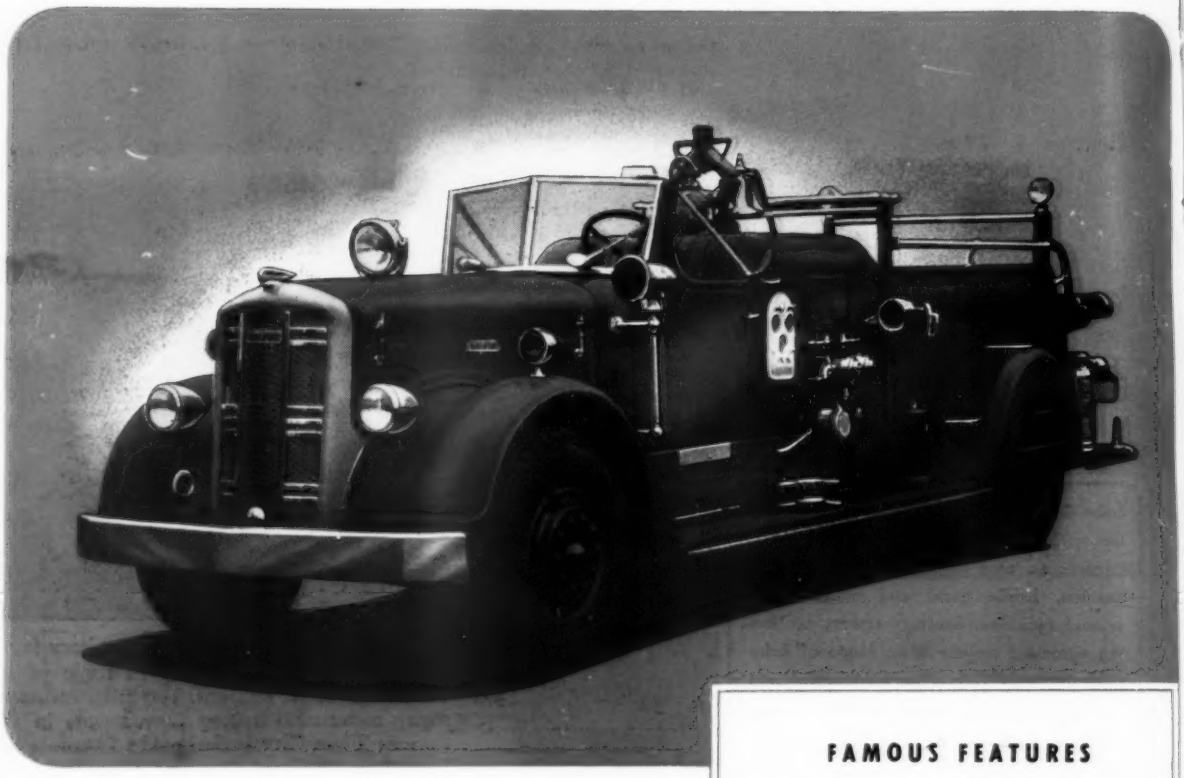
NATIONAL CLAY PIPE MANUFACTURERS, INC.
571 Chamber of Commerce Bldg., Los Angeles 15, Calif.
522 First National Bank Bldg., Atlanta 3, Ga.
1105 Huntington Bank Bldg., Columbus 15, Ohio
111 W. Washington St., Chicago 2, Ill.

CLAY PIPE NEVER WEARS OUT! PIPE

C 847-1

TOO LITTLE

TOO LATE ?



Is your fire service burdened with inadequate or unwieldy apparatus when costly fires hit your community?

There is no need to face the old story of "Too little and too late". Investigate the many advantages offered in Ward LaFrance Triple Combination Pumpers. There is a Ward LaFrance *engineered* pumper that can give your community the full protection of modern fire-fighting apparatus.

Benefit from the many years of fire apparatus experience offered by Ward LaFrance. Write today outlining the particular requirements of your community. Our Engineering Department will gladly furnish competent counsel in helping to solve your problems.

FAMOUS FEATURES

- Full powered 6 cylinder engines designed specifically for fire fighting apparatus assure dependable pump performance under all conditions. There is no "paper horsepower" in a WARD LaFRANCE.
- Exceptional maneuverability gained by special front axle construction. Variable rear axle ratios to suit local performance requirements — speed for level country; climbing ability for hilly country.

WARD LAFRANCE TRUCK DIVISION

Great American Industries, Inc.

ELMIRA, **NEW YORK**

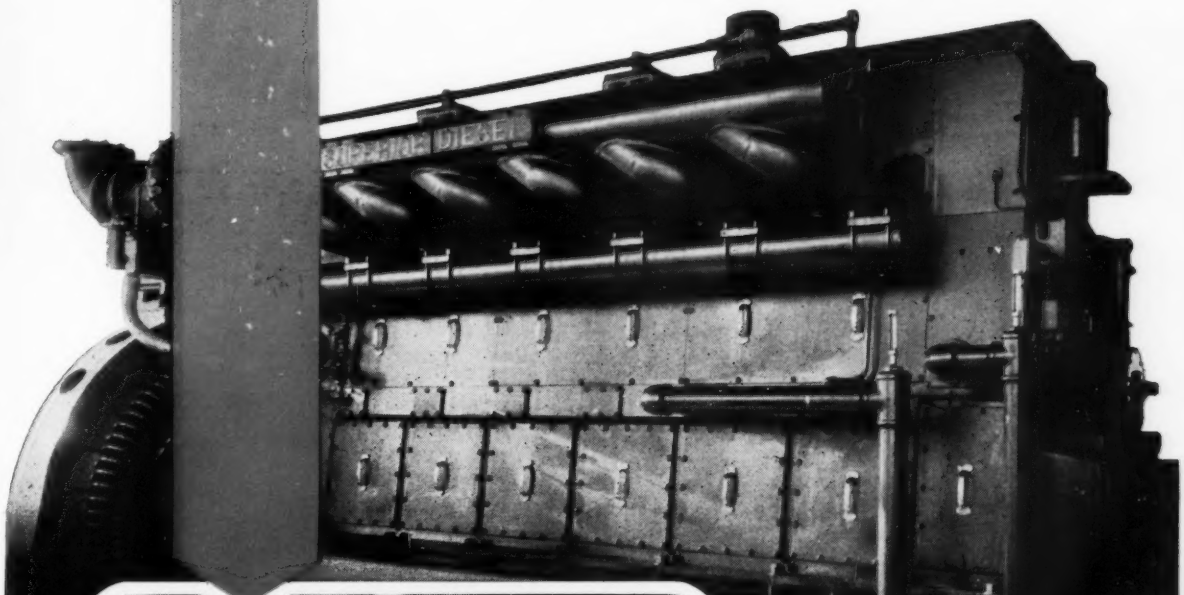
WARD FIRE APPARATUS LA FRANCE

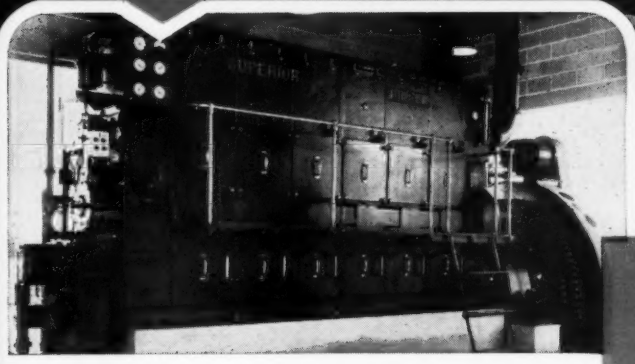
FOR *Faithful Performance*

BUY A SUPERIOR DIESEL ENGINE

The dependability of Superior Diesel Engines has been proven by hundreds of applications in diversified uses.

Conservative ratings; efficient pressure lubrication; clean combustion; precision bearings; heavy, rigid crankshafts; strong bases and cylinder blocks; time-tested roller chain camshaft drives; and many other modern features give more value in Superior Diesel Engines.





This Superior Model 60 Supercharged Diesel Engine installed in a REA plant at Burnips, Michigan.

Superior DIESEL

SUPERIOR ENGINES DIVISION OF THE NATIONAL SUPPLY CO., PLANT AND GENERAL SALES OFFICE: SPRINGFIELD, OHIO

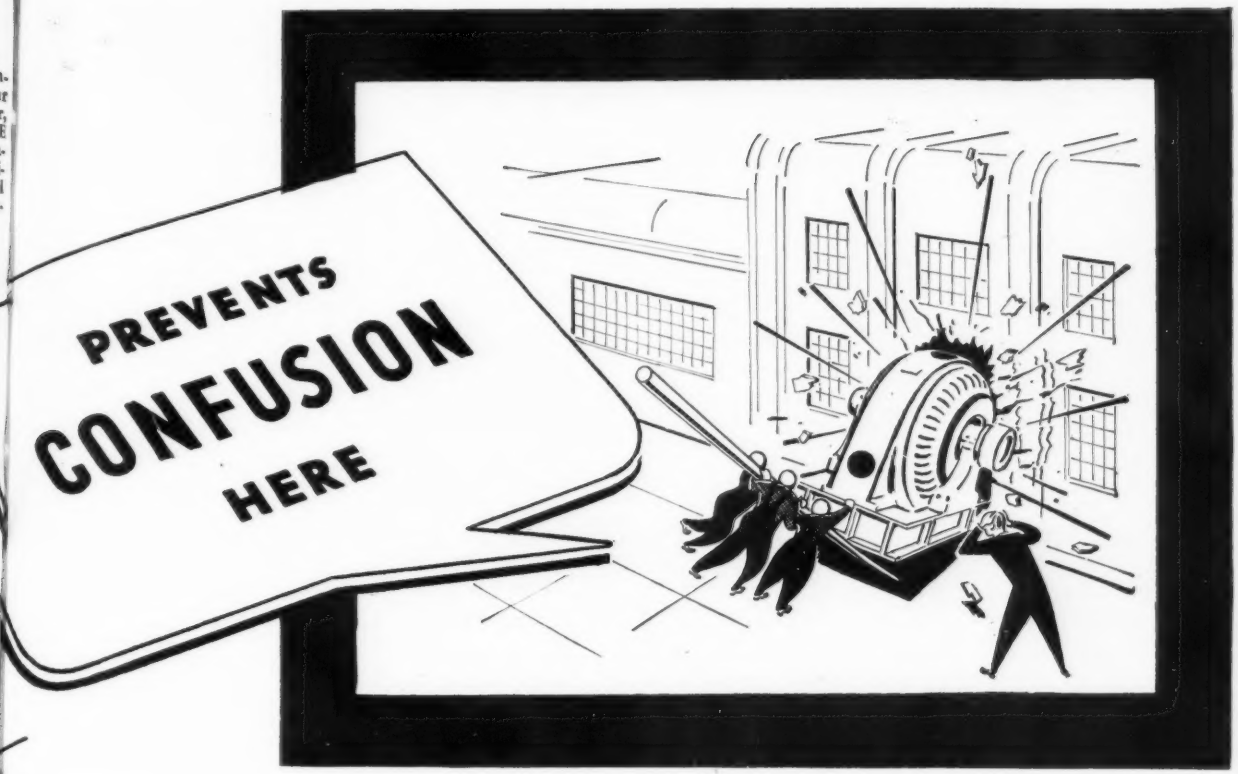
Co-operative planning between your consulting engineer, architect, and a G-E technical representative results in electrical plans that dovetail closely with architectural plans.

G-E PUMP MOTORS possess many *extra protection* features that contribute to continuous, low-cost service without undue maintenance. A wide range of ratings is available in synchronous or induction types, solid or hollow-shaft construction.

G-E CABINETROL, the packaged motor control equipment, saves you valuable floor space. Often you can make a unit part of a wall. Cabinetrol is less costly to install than a made-up assortment of controls.

G-E LOAD-CENTER UNIT SUBSTATIONS not only perform well — they look well, too. You can select factory-assembled units with either Pyranol or dry-type transformers, 100 to 2000 kva. Completely metal enclosed for operators' and visitors' safety.

G-E WIRE AND CABLE meets all the service conditions of water and sewage plants. Gas-filled, varnished-cambric, interlocked-armor, and Flamenol types are available for most power distribution and control purposes.



. . . and gives you a "stay-young" plant at less cost!

TO YOU who are planning to build a new water or sewage plant or improve an old one, General Electric extends this invitation:

> **In the interest of co-ordination between the architectural, electrical, and mechanical phases of plant construction, ask a G-E technical representative to "sit in" on your planning conferences.**
>
> ***But, most important, do it NOW—when your thinking is still in its early stages and the latest and best ideas in water or sewage plant electrification can all get a fair hearing.***

We believe you'll benefit a great deal in the long run. Your electrical equipment will be "built into" your plant instead of being "shoehorned in." Walls won't have to be ripped out and ceilings lifted to make room for motors and controls. You avoid the delay, waste, and dissatisfaction that "patchwork" electrical planning brings.

Naturally, you'll want the best advice and recommendations on your electrical problems. For only in this way can you avoid the risk of early obsolescence in your plant. G-E technicians are well qualified to help you. They are backed up by more than 35 years experience in designing, building, and applying completely co-ordinated electrical equipment for water and sewage plants. They offer you sound application of the most up-to-date ideas in plant electrification . . . factory-assembled unit substations, metal-clad switchgear, Cabinetrol, and gas-filled cable.

Designing your new water or sewage plant is a job we couldn't and wouldn't undertake. Moreover, we do not suggest you regard your plant as merely a housing for electrical equipment. But we do think that the electrical phase of your planning should be considered *now* when plans are still being formed. *Your plant will be sure to keep its "youthful looks" longer. Apparatus Dept., General Electric Co., Schenectady 5, New York.*

This full-color motion picture can help you stimulate action by community leaders to improve sewage treatment in your locality. It's part of G.E.'s long-range "More Power To America" program. Check with your local G-E office.

GENERAL ELECTRIC

666-38-3098

RIC-WIL CONDUIT MAKES IT POSSIBLE TO INSTALL STEAM LINE UNDER BUSY STREET — WHILE TRAFFIC MOVES AS USUAL

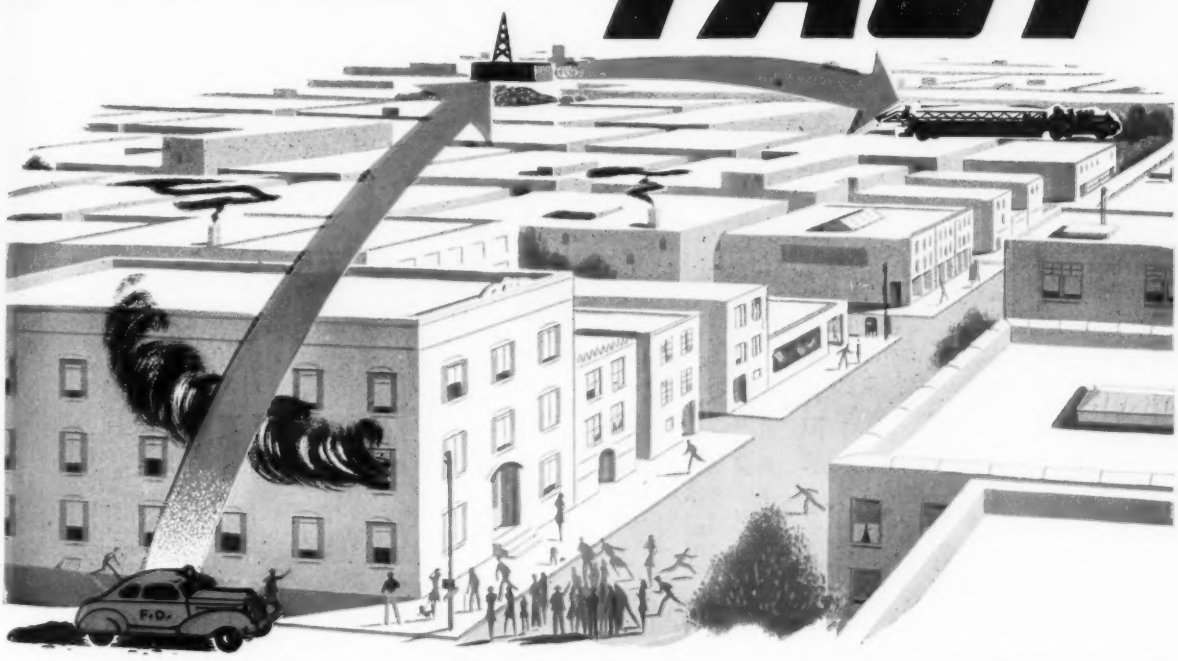
Special flanged prefabricated units 10' 6" long, arranged for lateral expansion, installed in tunnel.

● Ric-wiL prefabricated insulated units enabled the Toledo Edison Co. to carry out a truly modern method of installing underground pipe, without the necessity of tearing up street pavement from curb to curb. Instead of the tremendous expense and crippling confusion which are often involved in such projects, traffic proceeded normally on busy Jefferson St., almost completely unaware of the work in progress below. From a 6 ft. square excavation at the steam main, crews augered 26" x 36" tunnels both ways, welded Ric-wiL pre-sealed units together and jacked them through to building basements. This is a graphic demonstration of one of the many reasons why the words "Ric-wiL Prefabricated Conduit" appear with such constant regularity on engineering specifications sheets.

Write for descriptive Catalog No. 44.

RIC-WIL INSULATED PIPE CONDUIT SYSTEMS
THE RIC-WIL COMPANY · CLEVELAND, OHIO
AGENTS IN PRINCIPAL CITIES

RADIO LOCATES FIRES FAST



and Boston quickly sends the right equipment

with Motorola F-M 2-WAY RADIO

Since the FCC and WPB have okayed radiotelephone for fire departments, you need no longer lack this essential equipment.

Boston reports its newly installed Motorola F-M 2-way Radiotelephone System so successful, officials declare: *"It is unthinkable to be without it."* Photo at left shows Battalion Chief, after arrival at fire scene, reporting to Boston Fire Alarm Headquarters, shown in the photograph below.

Originators and developers of the famous "Handie Talkie", the small, portable, 2-way radio used on every fighting front, Motorola Radio engineers are also famous for the F-M 2- and 3-way Motorola Radiotelephone Systems installed in 33 States and in over 1,000 communities throughout the United States, the Canal Zone and the Hawaiian Islands.

Write or wire today for complete details.

GALVIN MFG. CORPORATION • CHICAGO 51

F-M & A-M HOME RADIO • AUTO RADIO • AUTOMATIC PHONOGRAPHS • TELEVISION • F-M POLICE RADIO • RADAR • MILITARY RADIO

ON THE BEAUTIFUL GULF COAST OF FLORIDA

The Florida Gulf Coast is best during April, May and early June. Stay at the luxurious Soreno Hotel; make your Florida visit supreme.

Every room of sparkling beauty overlooking the always enchanting Waterfront Park, Tampa Bay and the Central Yacht Basin. All rooms single or en-suite have private bath. Excellent cuisine served elegantly. Exquisite Palm Room. Sun kissed Mezzanine Lounge.

Play at your favorite sport, swim, sun bathe, boat, fish, ride, tennis, golf, badminton, or rest and relax in the glorious Florida sunshine. Enjoy the facilities of the private Bath Club on the Gulf of Mexico.

American or European Plan—Rates 25% lower.
Make early reservations for April, May and early June.

The **SORENO** *Hotel*

HARRY R. NASH • *Managing Director*

WRITE THE SORENO HOTEL FOR FURTHER INFORMATION AND LITERATURE

HELPING TO MAINTAIN

Better Water Service

IN FAST-GROWING

STOCKTON, CAL.

ELEVATED STEEL TANKS
by
PITTSBURGH ·DES MOINES

With an excellent service record established by its original Pittsburgh-Des Moines Elevated Steel Tank installed six years ago, the California Water Service Company at Stockton, California, has recently added a second P-DM tank to serve the northern section of the city, where it has been successful in maintaining a more uniform pressure than was formerly available. With a wide-ranging water system, Stockton takes its water supply from a number of deep wells located at pumping stations in various points throughout the distribution system. These Pittsburgh-Des Moines Elevated Steel Tanks do their full share in lowering pumping costs and aiding in the equalizing of water pressures around the clock.

For a detailed consultation on the better water storage needs of your own community, write—without obligation of any kind.

PITTSBURGH · DES MOINES STEEL CO.

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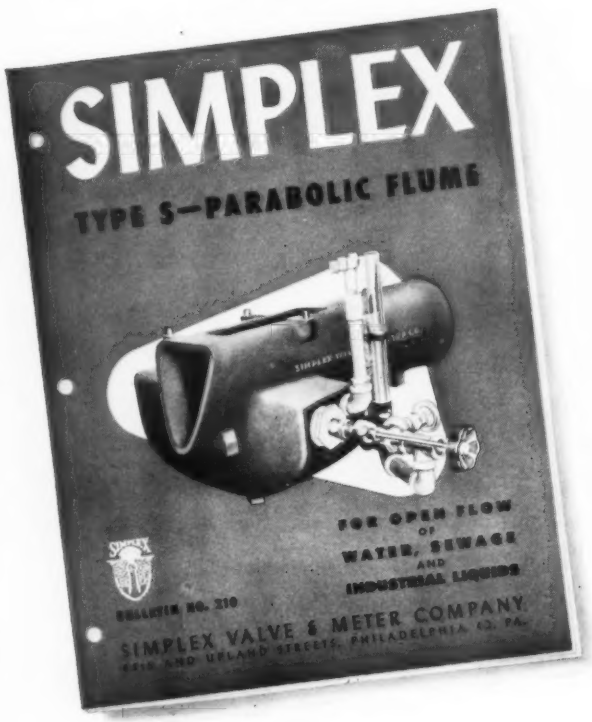
SIMPLEX

TYPE-S PARABOLIC FLUME

WRITE FOR BULLETIN 210


SIMPLEX
TYPE S—PARABOLIC FLUME
FOR OPEN FLOW OF WATER, SEWAGE AND INDUSTRIAL LIQUIDS
BULLETIN NO. 210
SIMPLEX VALVE & METER COMPANY
68TH AND UPLAND STREETS, PHILADELPHIA 42, PA.

For open flow of water, sewage, and industrial liquids

WRITE TODAY FOR YOUR COPY OF SIMPLEX BULLETIN 210 describing the operation, installation and capacity of the new SIMPLEX Type–S Parabolic flume. Contains necessary detailed data for design and specification purposes. Address inquiries to Dept. 304.

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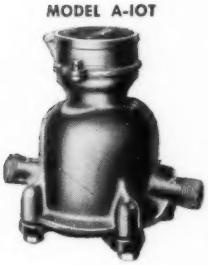
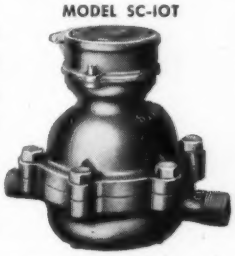
There is a BADGER METER to meet your every requirement from a 5/8" household service to a 12" industrial installation.

MODEL A-IOT



The model A-IOT is of a frost proof design. Breakable bottom plates are attached to the main housing by heavy stud bolts. There is no possibility of corrosion or dirt causing the bolts to stick.

MODEL SC-IOT



The model SC-IOT is a split case meter for use in warmer climates, where there is no danger of freezing. Working parts can be removed from the housing without disconnecting meter from the line.

Both models have two-piece snap joint chambers, three piece discs and oil enclosed gear trains. Open gear trains are available without extra cost.

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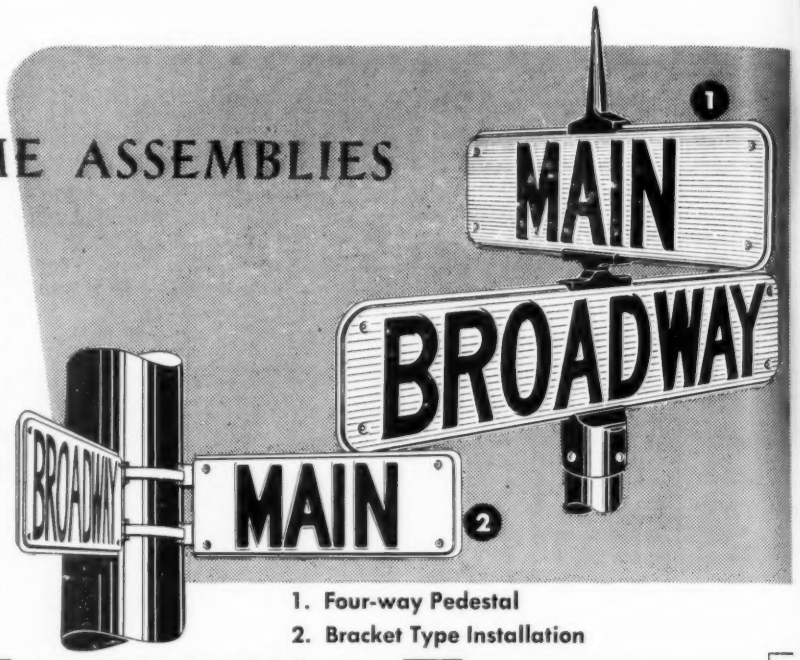

1. Four-way Pedestal
2. Bracket Type Installation

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Cast Iron Pipe and Special Castings, Bell and Spigot, Flange, Flexible Joint, Culvert, Milled and Plain End Tubes, Cylinders, Flanged and Bell and Spigot Fittings, High Pressure Fire Service Pipe, Warren Short Body Specials, Threaded End Pipe.

Size 2 to 84-inch

Pipe manufactured in accordance with standard specifications adopted and approved by water works associations and engineers.

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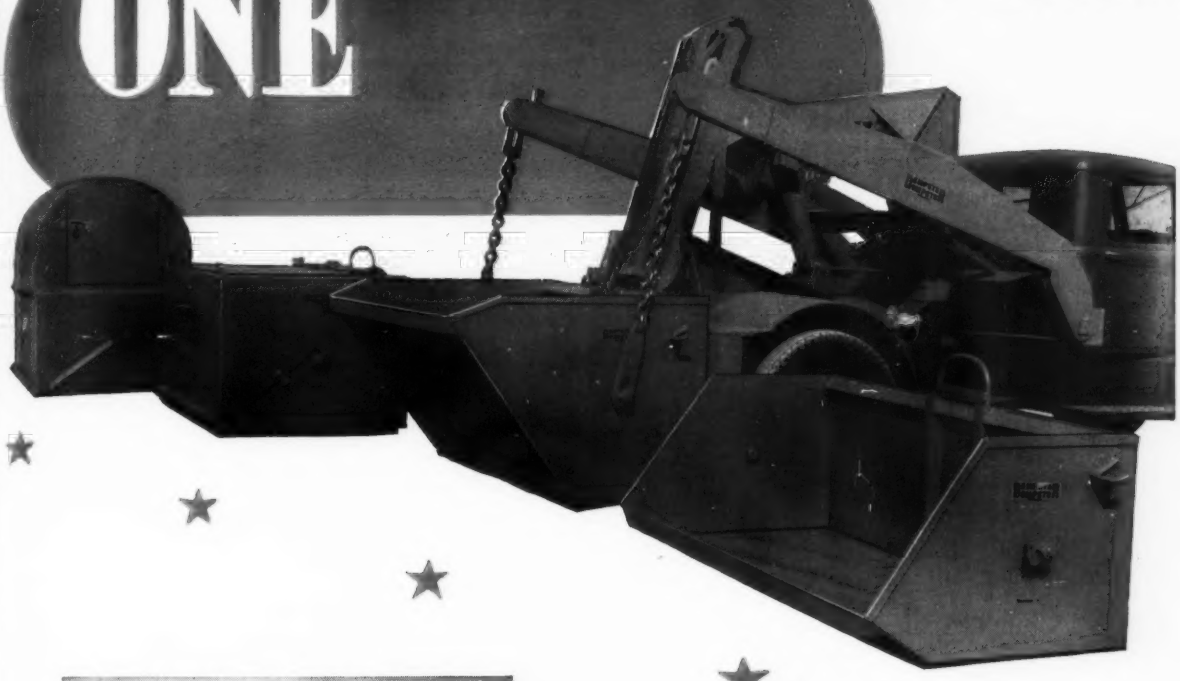
ONE TYPE OF BODY IS NOT ENOUGH-



Pictured is the Apartment-type body in three stages of operation. Above, on ground. Below, in carrying position. Right, dumping.

-FOR EFFICIENT TRASH & RUBBISH COLLECTION

If rubbish collection is a "Headache" in your community, if you use the old fashioned, unsanitary open truck method of collection, it will pay you to investigate the Dempster-Dumpster System. Here's how it works. A large number of bodies, each designed for the specific needs of the user, are placed at needed points for community projects, schools, apartments, factories and stores. They are picked up loaded, at regular intervals in a few seconds by truck hoisting unit for hauling and dumping. It's as simple as that. One man can handle the entire operation. It eliminates costly injuries to personnel, and unsanitary litter in your city's streets. The Dempster-Dumpster system is flexible, and adaptable to the smallest or largest community. Equipment investment and maintenance is at a minimum and will easily fit into your municipal budget.

Write today for the complete story on how your municipality can join the hundreds of cities now using the efficient Dempster - Dumpster System.

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TRADE MARK REG.

DEMPSTER BROTHERS, INC.
347 Springdale
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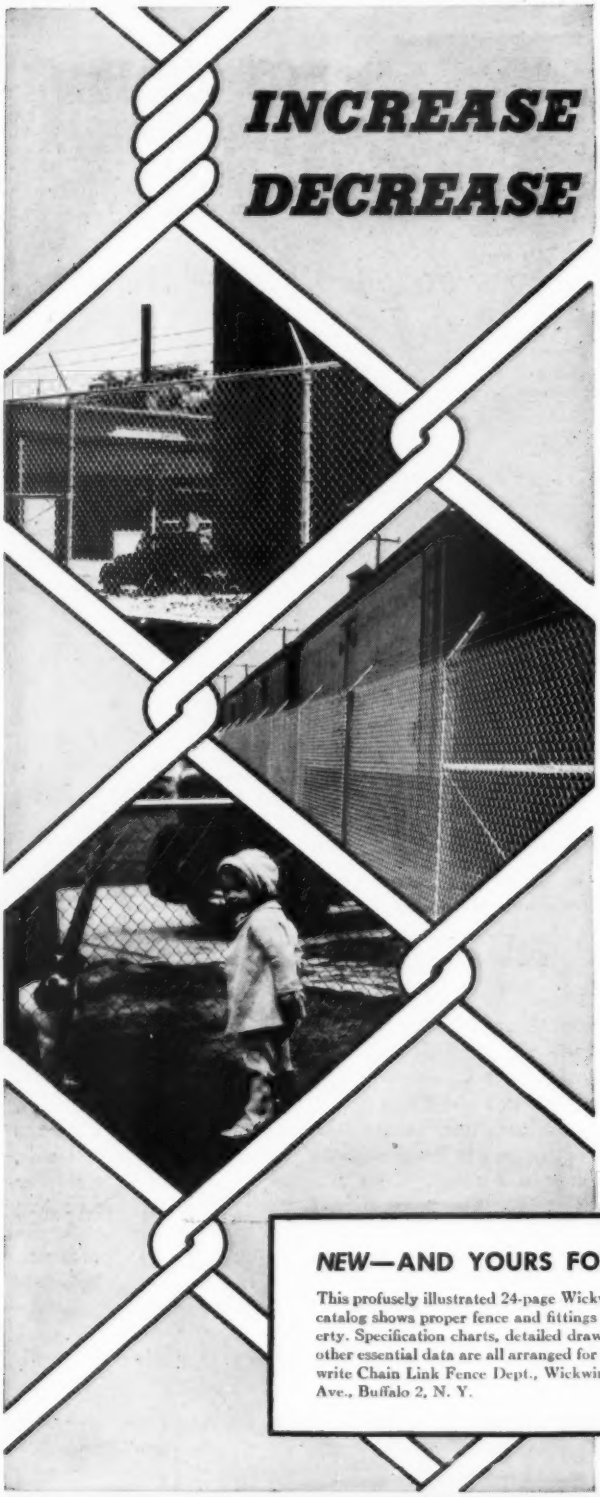

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A well erected Chain Link Fence is a profitable investment. It not only protects property against arson, theft, trespassing and other costly hazards, but its initial cost is moderate and maintenance costs are amazingly low.

There are special types of Chain Link Fence for industrial plants, railroads, airports, schools, residences, playgrounds and other kinds of property. Each type is as fine in quality and service as can be made. The fabric and framework is of carefully selected steel wire, hot galvanized. Fittings are of malleable iron and pressed steel, heavily galvanized, or aluminum.

FREE CONSULTATION. We will be happy to measure your property, work out details to insure proper protection and submit estimates without obligation, for fence material ready for erection or covering complete erection. Expert installation and erection service is maintained either direct or through reliable distributors throughout the country. Write to our nearest branch office.

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This profusely illustrated 24-page Wickwire Spencer Chain Link Fence catalog shows proper fence and fittings for various types of real property. Specification charts, detailed drawings, erection instructions and other essential data are all arranged for quick reference. For your copy write Chain Link Fence Dept., Wickwire Spencer Steel, 361 Delaware Ave., Buffalo 2, N. Y.

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Your best bet for TOUGH *Jobs*

INTERNATIONAL Diesel Crawlers

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Tune in James Melton on "Harvest of Stars" every Sunday, NBC Network.

Tough earth-moving jobs move along on schedule when International Diesels haul the scrapers. No pushers or snatch tractors needed! Even on hardpan which track shoe grousers won't penetrate, Internationals have the lugging ability to load their scrapers to the brim!

Quick starting, unbeatable operating economy and unrivaled dependability make International Diesel Crawlers your best bet for licking tough earth-moving jobs fast. See the International Industrial Distributor near you for the facts about these tractors and their matched equipment, also the service facilities and stock of parts he maintains.

Industrial Power Division
INTERNATIONAL HARVESTER COMPANY
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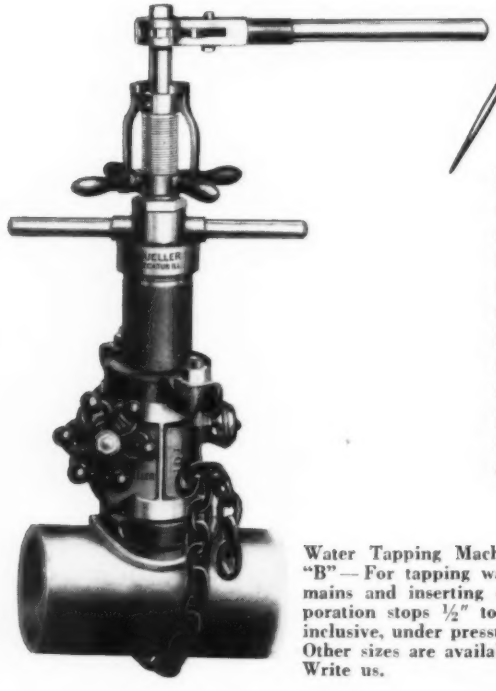
INTERNATIONAL *POWER*

CRAWLER AND WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS

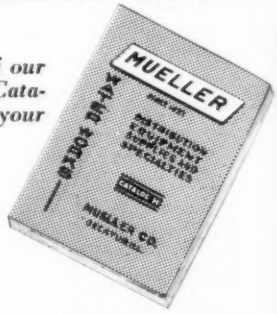
What's a Thread ?



Water Tapping Machine "B" — For tapping water mains and inserting corporation stops ½" to 1" inclusive, under pressure. Other sizes are available. Write us.

If they are MUELLER threads, they are your best method of securing accurate alignment and tight joints when inserting Corporation Stops. Each MUELLER Corporation Stop has sharp, deep and clean-cut threads for easy running in the tap. They have the right chamfer for easy starting and the proper taper to run up to a tight fit with less danger of splitting the main. Mueller combined Drills and Taps when used with MUELLER Tapping Machines, not only cut threads in the main that fit MUELLER Stops perfectly, but they also accurately align the Stop to the main, making an installation that no other method can approach.

Do you have a copy of our "H" Water Works Catalog? If not, write for your copy today.



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OUR 90th YEAR

MUELLER CO.

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OTHER FACTORIES: *Los Angeles, Cal.; Chattanooga, Tenn.; Sarnia, Ont. Canada*

GENERAL

BWH
DEPENDABLE RUGGEDNESS

NOW! 113 YEARS OF FIRE-FIGHTING KNOW-HOW AT YOUR SERVICE

To better serve the municipalities of America, the General Detroit Corporation has been appointed exclusive sales agent of famed Boston Woven Hose & Rubber Co's *Municipal* Fire Hose for virtually all of the United States, as well as for export markets.

The progressive General Detroit Corporation and its subsidiary, the General Pacific Corporation, add their 44 years' experience in the manufacture of fire extinguishers and motor fire apparatus to the enviable 69-year record of Boston Woven Hose in producing the original cotton-jacketed hose, accepted as standard everywhere today.

Municipalities across the land recognize the real economy of using dependably rugged BWH Fire Hose. The "smoke eaters" know its flexibility and ease of handling.

This pooling of effort means that BWH Fire Hose will now be available to municipalities through the branch offices and warehouses of the General Detroit Corporation in almost every section of the country. A "General" representative is nearby to help you. His knowledge and experience are at your service. Please call on him for dependable advice when next your city needs fire hose of dependable ruggedness.

BWH
"BOSTON FIRE JACKET" HOSE
Double Jacket

Outstanding value. A real quality hose for municipalities that want the best obtainable.

BWH
"PARAMOUNT" HOSE
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An exceptionally fine value. High-grade materials and workmanship throughout.

BWH
"UNDERWRITERS" HOSE
Single or Double Jacket

Made in strict accordance with National Board of Fire Underwriters specifications. Labeled or unlabeled.

BWH
"MILO" HOSE
Single Jacket

Made for light pressures where a good, strong, light weight hose is desired.

NOW! Distributors of famous
BOSTON WOVEN HOSE AND RUBBER CO.
Municipal Fire Hose

THE GENERAL DETROIT CORP.
Manufacturers of Fire Extinguishers
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THE MARK OF SUPERIORITY IN MODERN BUSINESS MACHINES

This new symbol identifies the world's best-known line of business machines. It is introduced as Burroughs' long-range, far-reaching program of research and product development reaches full postwar tempo. Expect the finest in machines, in counsel and in service wherever you see this symbol.

Burroughs

ADDING · CALCULATING · ACCOUNTING · BILLING AND STATISTICAL MACHINES
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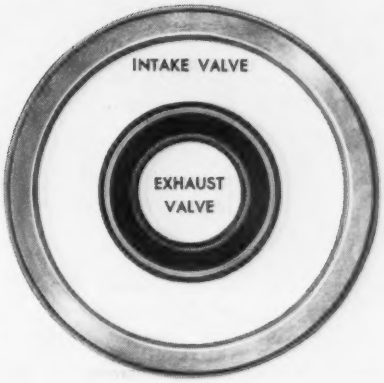
Davey Valves Assure
PERMANENT PEAK EFFICIENCY



Any compressor will run perfectly when it is new... and will produce its rated air capacity.

The real test of quality comes with increasing age... the manner in which a unit operates after 5-10-15 years of service. This depends 100% on valve efficiency.

In Davey Compressors permanent peak valve efficiency is the result of providing a ready path for heat removal through aluminum alloys. These alloys transmit heat through their mass three times as fast as cast iron.

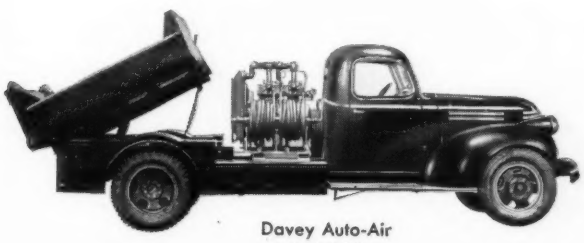
Consequently, Davey units operate at constant peak efficiency—longer and more economically.

Davey is your best compressor investment—both for today and tomorrow. See your Davey dealer now. Ask him to tell you more about Davey valves—also, how vibration has been "engineered out" of the Davey line for '47.

P & P-115

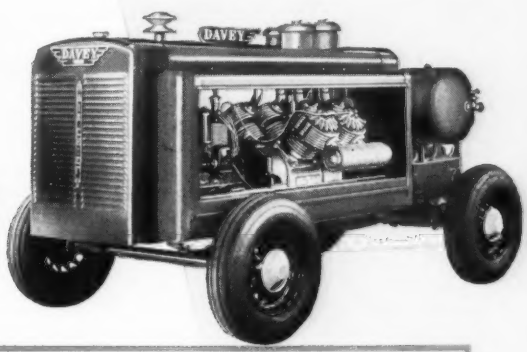
AFTER 13 YEARS of continuous service, these valves were recently removed from a Davey Compressor.* Their peak-efficiency condition is attested by the absence of carbon or pitting. Note how they have obviously seated perfectly—the complete absence of any signs of leakage . . . after 13 years.

**Owner's name on request.*



Davey Auto-Air
Model 105

Davey Air Chief
Model 210

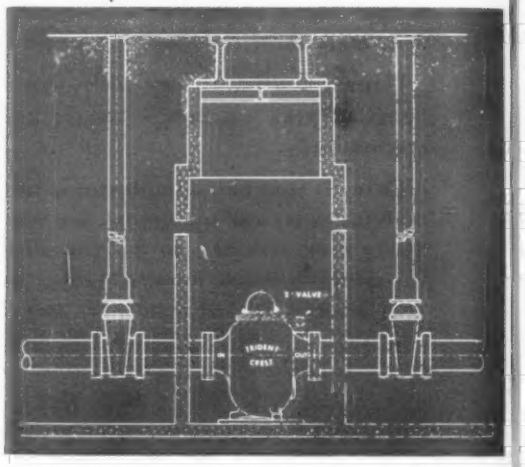


DAVEY

DAVEY COMPRESSOR CO.
KENT, OHIO

...don't forget the *larger* meters

It's essential, of course, to check regularly on the accuracy of small meters. But your LARGE meters should register accurately, too. Unaccounted-for water passing through them means a substantial loss of cash revenue, so necessary to balance increased production costs. Tests such as shown here are rapidly and easily made. They have reduced unaccounted-for water as much as from 10 to 15% in actual practice.



Typical installation of large meter with valves to facilitate testing.

Two Books for every Water Works man

"An Outline of Water Meter Practice" is a comprehensive study of metering. "Planned Meter Repair and Testing" tells and shows how to plan your repair shop for the more efficient and economical handling of meters and meter parts. Both are backed by the services of your nearest Trident Representative.

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Volume LXIV Number 4
APRIL 1947
The American City

The City Tells Its Story

Public Relations Can Pace Your Progress

By HENRY DAVIS NADIG
Director of Public Relations
Regional Plan Association
New York, N. Y.

The activities of City Hall and the reactions of John Q. Citizen to what comes out of City Hall have long been of major interest to the writer of this new department in THE AMERICAN CITY.

As a newspaper reporter and columnist, Mr. Nadig has covered, independently and on assignment, most phases of municipal operation. He has a background of factual reporting and editorial interpreting of both official action and public response.

Before joining the executive staff of the Regional Plan Association in January 1946, he was on the New York Bureau of the Associated Press. Prior to that he was for nearly ten years with the Keene (N. H.) *Evening Sentinel*.

Mr. Nadig's experience, which also includes radio work, magazine editing and public speaking, well equips him to report and evaluate municipal use of the various public relations media. His main work now involves public presentation of the principles and objectives of regional and community planning.

YOU can produce enduring community progress if John Q. clearly understands and shares the why and the how of official aim and action. But—you've got to tell your story—and tell it plainly.

To cause Mr. Citizen to know and appreciate what you as an official are doing, to make him feel a part of what you are trying to accomplish for his and your community, is the job of municipal public relations.

That's all there is to it! It's as simple as that!

Why we've been so long in getting around to dramatizing the workings of local democracy for the public is akin to the question of why national democracy is so tardy in dramatizing peace: the human equation is not always easy to solve; it often defies evaluation, and fallacy follows.

But the local community is beginning to drag itself out of the quicksand of delusion. Towns and cities and counties are stepping up onto the solid soil of truth; they're coming to see the basic importance and prime necessity of real public relations work. And I think they're going to find it costs less in the long run to plan and carry out an adequate public relations program than it does to proceed haphazardly with promotion of municipal activities.

As we go along, it'll be my job to try to point out for you the ways that municipalities and municipal officials and departments are getting down to plain talk with the people of their communities. It'll be your job, if you will, please, to help me do this in whatever way you may see fit. If you've read this far, maybe you've already got something up your sleeve. Why not pull it out?—and let's talk about it.

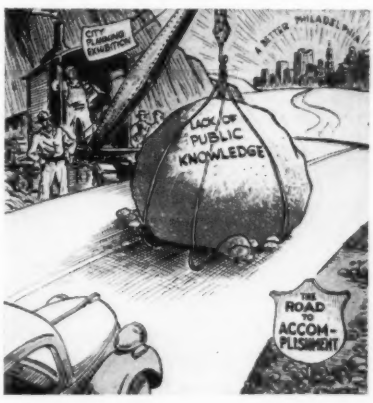
Officials Are Taking Stock

To handle public relations most successfully, you have to start where public relations begins—with yourself. What is your concept of your official position? What's your attitude toward the public and its reactions? Do you find yourself occasionally taking stock? It's what we all need to do once in a while. And officials are doing it—and making the process more productive all the time—both here and abroad.

At a conference of the Institute of Public Administration at Oxford recently, they did just that. They asked the question: "Are public officials inevitably unpopular?" Then they proceeded to analyze. Their relations with the public would be more effective, they concluded, if these relations were more human. The British magazine *Citizen* reports Lord Lindsay as citing Lincoln's daily public-opinion bath—his two-hour at-home to all callers.

Lindsay pointed out that the official should be sure he appreciates the viewpoint of the ordinary man and woman. He urged that local officials be on the local authority public relations committee. He went so far as to voice approval of the idea of humanizing administration by the creation of empowered executive bodies on which officials and voluntary lay persons would sit together.

Yes, public relations stock-taking by officials—particularly by local officials—is on the upsurge. And it's essential to creating receptivity, understanding, and cooperation from the public. Whenever there seems to be an iron curtain between officialdom and the public, you try to remove this barrier, either consciously with design or unwittingly without plan. Public relations is the consciously with design or unwittingly



Cartoon technique dramatizing the Philadelphia City Planning Exhibition, which will open September 8.

The obstacle may involve as small a thing as the question of a fact-seeking citizen or the phobia of a chronic gripe; it may concern the larger issue of a public works program or the making of a master plan. Whatever it is, you know there's a way to overcome it—through humanizing your contact with the public.

This, then, is your fundamental problem: to apply the techniques of public relations skilfully enough to anticipate the potential barriers of ignorance, misunderstanding, and prejudice, so they won't be flung across the paths of municipal progress.

Let's take a look at some of the techniques in the various media of public relations currently being used by alert municipal officials. You don't have to look far—either on this page or, prob-

ably, in your own locale—to find some examples.

The Philadelphia City Planning Exhibition, opening at Gimbel Brothers on September 8 for five weeks, will undoubtedly be the most important effort yet staged in the U. S. to get planning across to the public. It is a consciously designed attempt to remove the lack-of-public-knowledge barrier. Costing about $300,000, the displays will be of a permanent nature. They mark the most extensive use to date of the exhibition instrument in public relations pertaining to city planning.

Findings in a *Philadelphia Bulletin* poll showed 10.8% of the adults in the city ignorant of what the Planning Commission does. So the project also will be a major test of what can be accomplished by exhibitions. The results are bound to be of special significance and will be closely watched by city planners everywhere.

You'll be seeing more about the Philadelphia exhibition in this department during succeeding months. But a word about the announcement folder. The black-and-white cartoon, reproduced here, dominates the light blue cover of an 8⅛-by-10¾, single-sheet, six-page brochure. On the three inside pages are a letter explaining the origin and purpose of the exhibition and a two-page preview, with text and illustration, of what the public may expect to see next fall. Results of the poll, showing appalling lack of public knowledge about planning, occupy the fifth page; the sixth lists officers and directors of the exhibition. The announcement folds conveniently into a long business envelope.

Your Annual Ambassador

One other technique in another medium commands attention: that of the annual report in the publications

THE MUNICIPAL REPORTER

1946 WAS A YEAR OF PROGRESS FOR BELOIT

City Share of Tax Rate Is Least of All

Prosperity Is Evidenced and Population Up

Prevention Formula Still Better Than Many Cures

New Projects Are Planned Here in 1947

Despite Shortages Beloit Has 1946 Building Boom

Clip These Handy Facts About Your Home Town

Beloit reports its municipal operations of the year in this ten-page, tabloid-style annual report.. "Government should have no secrets from its citizens, and this is our gesture, giving them a complete coverage of our activities," says City Manager Telfer.

field. Some of last year's were highlighted in the December 1946 issue of THE AMERICAN CITY, accompanied by an article that should prove very helpful to those trying to bring life and color and human interest into their reports.

Your annual report can easily be one of those greatnesses that are thrust upon you. If you haven't already, you can turn it from a perennial chore into your community's ambassador of ambition and good will, as many now are doing. Here are two examples showing two different ways of presenting the annual municipal report, each with its own style of human-interest appeal.

A. D. Telfer, City Manager of Beloit, Wis., writes that this is the second year they have issued their annual report in tabloid news style (on better than tabloid paper!) Before that they issued a mimeographed report that had "very little circulation." Now they use Boy Scouts to get *The Municipal Reporter* to every home in the city and delivered 8,000 by Scout carrier this year.

Mr. Telfer modestly says, "we have much to learn in presenting our report," and asks for comments. My answer: You're doing a swell job. Suggestion: Cut down text of stories; add a few more one and two-column pictures.

As to how the report is turned out, Beloit's City Manager writes: "During the year we save all newspaper clippings concerning the city government. Then, when we are ready to prepare our report, each department furnishes my office with a complete report of its activities for the year. With this combined information we re-edit for final printing."

Berkeley Tells a Picture Story

One of the most unusual annual reports you'll see in the latest group is *A Berkeley Portrait*, a 32-page, 5½-by-7¼-inch two-color booklet, tracing in twenty-nine photos and 1,800 words the ways that local government has affected the lives of "the Hawkins family."

H. D. Weller, Research Assistant of this California city, writes that the Hawkins family "are bona fide residents of Berkeley, chosen by city officials after an intensive search for photogenic and appropriate models." They give snap, color, and character to dramatize in charming simplicity this very human-interest report.

Formal requirements—the Directory of City Officials, the Organization Chart, and a Letter of Transmittal from City Manager Gerritt Vander Ende — have

(*Continued on page* 129)

"Mr. and Mrs. Hawkins," of the Berkeley, Calif., annual report, are up and doing early to cast their ballots (left), while young Dave and his little sister (right) are interested in learning more about the bright red fire engines. When the members of "The Hawkins Family" retire for the night (center), they "sleep soundly, well protected against fire and crime, their safety and welfare secure 365 days a year—this year, next year, and all years to come."

Can Municipal Taxes Be Reduced?

To What Extent Can Municipalities Support Their Public Services?

FEW municipalities can reduce their taxes. A decreasing proportion will be able to finance the growing list of public services and social welfare payments. This inability to reduce taxes and support services results generally from an increasing level of costs, a growing number of services primarily in the social welfare group, and a spotty and illogical distribution of the total public revenue.

Municipalities can act independently in many ways to improve their ability to support their public services. Some of these follow:

1. *Get rid of political appointees, useless workers and deadheads.* Civil service must be used to get qualified persons on the payroll, and neither political interference, civil service, nor union action should keep on incompetent or unnecessary employes. Retention of incompetents by any means is just as deadening as political interference is demoralizing. The salaries of top personnel in government should be increased greatly to attract capable, practical administrators and technicians.

2. *Recognize the high cost of municipal debt.* Avoid it where possible. Debt fixes municipal costs for a generation and makes reduction of taxes or the increase of services impossible. The greatest municipal waste may be found in this area. Sometimes it comes through inability to sell bonds properly. At other times bonds are sold when it is unnecessary to do so.

3. *Municipalities can now and in the future support some services but not all services.* They can support *more* services when their debts are low and the income of the community is high. They cannot be expected to support from local funds the services that spread unequal burdens such as social services, or services which increase out of proportion to municipal income, such as unemployment relief, education, unusual construction projects, and many newer social services.

4. *A consistently balanced budget* over a long period of years is the best guarantee that a municipality will be in the best position to meet its obligations. But there must be included as expenditures all vital maintenance, all necessary capital improvements, and actual payment currently of all obligations incurred.

5. Municipalities need a *more flexible and a more dependable revenue system,* so that their revenues will increase with the price level or with added services and will not contract too greatly in times of depression. The states and the national government should be prepared to finance or take over the services which expand unduly, or supplement the revenues which shrink when they are most needed. Remember that local taxes generally are tied to an inflexible base, while state and federal taxes, primarily on incomes and sales, automatically give more revenue as prices and incomes rise. Probably the states get fewer tax complaints than municipalities because the latter must increase *tax rates* to get more money, while the states, without a change in the rate of the income tax or sales tax, just sit by and watch the money roll in.

6. Municipalities that are homogeneous, that grow gradually, that build community wealth as population increases, that are not surrounded by parasitical communities—these municipalities have few troubles and generally can support their public services.

7. On the other hand, rapidly growing municipalities that must finance improvements by debt, municipalities that construct uneconomic facilities, school districts that share unequally and unfairly in revenues such as that from railroad property in Illinois, municipalities surrounded by small communities which draw on the central city for many services but contribute little, if anything, and the very large cities where the state syphons off their income and returns too little—these municipalities cannot now and never will be able under similar conditions to finance their services.

8. Municipalities should endeavor to strengthen their local revenues by every means which is legally, socially, and economically sound. But the failure to do this does not give the state an excuse to impose unfair burdens by new services, nor does it give the state the right to absorb an unfair share of the total public revenue. But the failure of municipalities generally to handle their financial affairs as well as they might gives the state the excuse for interference in local affairs.

Conclusions

How can these recommendations to the states and municipalities be carried out? Try this. Establish a *state department* of municipal affairs equal in rank to the departments of highway, education, or health. Give it authority to conduct research, gather statistics, prepare municipal laws, and serve as the contact point between state and municipal officials, just as other departments do now in other fields. You need the facts which can come only from uniform statistics. You need the laws which can emerge from intimate departmental contacts. Augment this department with legislative committees or interim commissions.

The Pennsylvania local government commission has done notable work in eliminating a network of confusing legislation and substituting state-wide laws relating to debt and taxation. The Moore Commission in New York brought wide reform last year in the distribution of state aid and state grants. More recently, the Maryland Commission on the Distribution of Tax Revenues has reported. Finally, obtain the active cooperation of local government officials with the state department, state commissions, and legislative committees.

If you want a dogmatic answer to the foregoing questions, it would have to be, "Municipal taxes cannot be reduced substantially—municipalities can support their normal traditional services if the areas of government are large enough and state revenues are distributed equitably." But a dogmatic answer is never the best, so I recommend a careful rearrangement of areas, better distribution of state taxes, and a state agency for municipal acairs.

Excerpts from an address before the Eighth Biennial General Assembly of the States at Chicago, Ill., January 17, 1947, by Carl H. Chatters, Comptroller, The Port of New York Authority.

To Improve Local Assessing Practices

APPLICATION of outmoded revenue statutes by part-time, inadequately paid assessors and reviewers has resulted in confusion and inequality of assessed valuations in many states. The National Association of Assessing Officers, through its Advisory Council of twenty-five leading assessors, has suggested an eight-point program to improve assessing practices:

1. Install a modern, standardized assessment system, with property record cards and land value maps.

2. Organize the assessment district along functional lines.

3. Install a system for the regular recording and analysis of sales data, rental data, construction costs, and other information essential to accurate appraisals.

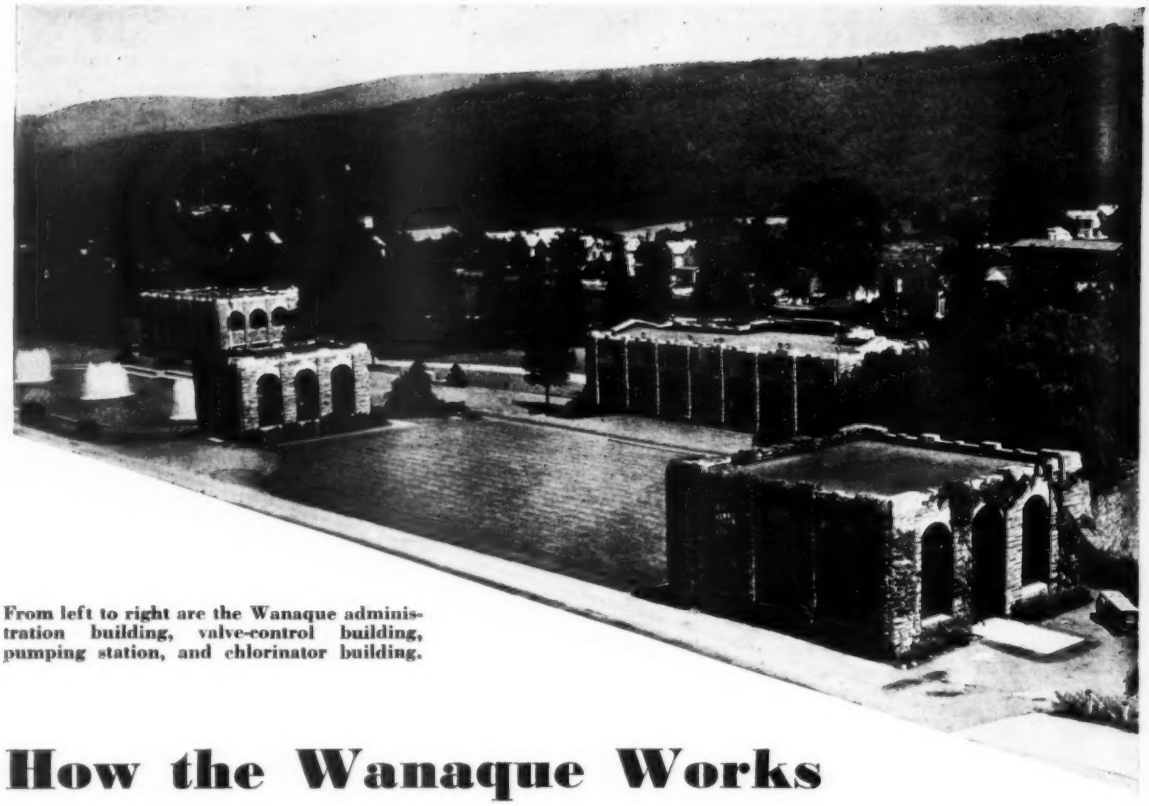
4. Call upon the state or county agency for assistance where the local office is not equipped in the solution of those problems on which said agency is equipped to give assistance.

5. Develop an intra-office training program for staff personnel.

6. Work out a plan for the regular reporting of assessment statistics.

7. Develop relations with the general public to insure that they are completely and accurately informed on assessment procedures and practices.

8. Plan and estimate the cost for a general reappraisal or reassessment in those instances where the present assessments indicate the need therefor.



From left to right are the Wanaque administration building, valve-control building, pumping station, and chlorinator building.

How the Wanaque Works

A cooperative venture in water supply, participated in by a group of highly industrialized northern New Jersey municipalities.

NEW JERSEY'S biggest and most important industry lies in the rock-studded hills bordering northern New Jersey and New York. This industry, whose production amounts to more than 30,000 tons per day, which serves indirectly almost a million people, is the Wanaque River Reservoir and Aqueduct of the North Jersey District Water Supply Commission.

To this district, the Wanaque Reservoir represents water supply order out of chaos. Early in New Jersey's history, each community supplied itself with water through its own system, owned either municipally or privately. And as virile young industries in these communities began to flex their muscles, they clamored for more water. The communities did all they could by themselves to answer the call; as far back as sixty years ago, officials in these Jersey towns and cities began casting anxious eyes around for a more reliable water supply. Invariably they wound up looking longingly at the Wanaque River. During the first World War, the area faced a near-disaster through increased water use and a decreased supply caused by a prolonged drought. Out of this came the realization that if the areas were to exist and prosper, they would perforce have to work together and solve their mutual problem.

It was prior to this critical experience that saw the birth of the North Jersey Water Supply Commission, although the commission's reason for being was to meet just such a need. In 1916, legislative action made it possible for these cities to band together into a commission that receives financial support, not through its own borrowing power, but through money forwarded directly by each city involved. Thus, the commission has not only the moral, but also the direct, out-of-pocket, financial backing of those cities wanting water service.

Search for New Sources

Immediately upon formation, the commission began a study of possible supply sources. It was very early able to produce data confirming the selection of the Wanaque River as a source of water. As a result of this decision, the commission applied for and received permission from the New Jersey Department of Conservation and Development to divert 50 million gallons of water per day from the Wanaque River to serve Newark, Paterson, and other municipalities.

The Wanaque supply had certain very definite advantages. Rocky, forested terrain provided a runoff area that carried with it a minimum amount of silt and suspended matter. An absence of swamp land meant that taste and odor troubles would be minimized. A drainage area relatively free from pollution meant that no problem would exist from the introduction of pathogenic bacteria. The supply needs only chlorination as a protective measure and the addition of lime to correct for a somewhat low pH. It requires no filtration except where special industries demand water of a particular quality.

With this fine potential supply available, the commission, spurred by the lessons of 1918, began construction in 1920 of an impounding reservoir capable of storing enough water to make available a daily supply of 50 million gallons. In 1923, however, a water supply shortage occurred that prompted still more communities to request water from this source and made a restudy of

the potential supply desirable. As the result of this study, the commission decided to develop the Wanaque to the fullest extent possible.

Its first consideration was to determine how much water should be allowed to flow downstream to protect the riparian rights of those living below the dam. Study indicated that a daily flow of 10 million gallons would give this protection, and storage estimates were predicated on this figure. Although streamflow estimates were not, too plentiful, engineers estimated that a reservoir capable of impounding 29,000 million gallons would insure a daily yield of 80 to 100 million gallons. And it was on this basis that the Raymond Dam was constructed.

This dam, named in honor of Thomas L. Raymond, Mayor of Newark and one of the men chiefly responsible for carrying the project to a successful termination, is of rolled-filled construction. Although built before present knowledge of soil mechanics made available modern control measures, it nevertheless showed excellent engineering. The dam has a concrete core wall extending to bed rock and a layer of impervious material next to this core wall on the upstream side. This clayey, impervious material was laid in 4- to 6-inch lifts, carefully rolled with two 10-ton rollers with grooved front rollers and flat back rollers. A small street sprinkler wet the embankment to provide adequate moisture and to help insure compaction.

For the rest of the dam, the design called for general excavated material laid to a slope of 3 to 1 on the upstream face and 2½ to 1 on the downstream side. In each case the faces were protected by a heavy layer of rip-rap. Two intakes take water from the reservoir, each at a different elevation and each with its own 72-inch inlet pipe. In general, the dam has the following characteristics:

Capacity when full	29,000 million gallons
Area of water surface	2,310 acres
Length of reservoir	6.6 miles
Greatest width	1.2 miles
Greatest depth	90 feet
Average width	0.5 miles
Average depth	37 feet
Length of main dam	1,500 feet
Shore line	30 miles
Watershed area	94.4 square miles

The reservoir connects with the various cities through twenty-one miles of supply line. This line consists of fourteen miles of twin 74-inch mains, two miles of 7-foot tunnel, and five miles of single 74-inch main.

Distribution of the water has been the subject of careful study on the part of all participants and is somewhat on a stockholder arrangement. The allotments are in line with the financial backing that each community gave the project, and are based on the following figures in terms of percent of output:

Newark 40.5%	Clifton 6.75%
Paterson 20%	Montclair 5%
Kearny 12%	Bloomfield 4%
Passaic 11%	Glen Ridge 0.75%

The system went into operation on March 20, 1930, under the direction of Charles C. Capen, chief engineer. It did not immediately begin serving all participants. Furthermore, the general business recession that took place at that time cut down on the use of water sufficiently to prevent full utilization of the potential supply available. From 1930 to 1932, the Wanaque furnished less than 40 million gallons daily. During months of its heaviest demand, its average was closer to 30. In the middle of 1932, however, the Passaic Valley Water Commission, representing Paterson, Passaic, and Clifton, began drawing from the system, pushing the production figures to an average slightly less than 70 million gallons per day. As Northern New Jersey began to shake off the lethargy of the depression, and later, as the rigors of war made their exacting demands, the Wanaque discovered requirements running as high as 100 million gallons daily.

If Northern New Jersey had suffered even a moderate drought during these years, the Wanaque would not have been able to fulfill its requirements, and industries would have had to curtail operations.

Left: The Wanaque aqueduct under construction. Below: The reservoir spillway can discharge 12,000 million gallons a day.

Left: The pumps are used when the lake-level drops and the head is too low to force the water through the aqueduct.

The commission is anticipating an increased use of water by the participants as industrial developments unfold. Furthermore, the fact that the water is soft, cold, consistent in character, and free from objectionable tastes and odors creates an interest in it by many industries who now have their own water supplies, particularly since ground water in the area shows evidences of becoming exhausted.

The most promising site for a new supply so far uncovered by the commission is located on the Ramapo River, about six miles below the Wanaque Reservoir. On the Ramapo River is an abandoned hydroelectric dam that could be renovated to make a small auxiliary pumping station for the Wanaque. The operation of the station would be keyed to draw water from the Ramapo during times of excessive floods, when the withdrawal of the water would actually be of benefit to those downstream, and during winter weather, when the Ramapo is not being used for recreational purposes. Thus, the withdrawal of this water would in no way impair the riparian rights of those downstream, and would actually enhance them during certain periods of the year.

Since the characteristics of the Ramapo water are somewhat different from that impounded in the Wanaque reservoir, these preliminary studies indicate the advisability of building a force main from the proposed new reservoir to Wanaque. This would mean that the Ramapo water would have an opportunity to mingle with the larger Wanaque supply and produce a combined water that would still have consistent characteristics.

Engineers have studied the use of the Ramapo for a water supply for many years. More than sixty years ago New York City gave some thought to a bold scheme whereby it would draw water from the upper reaches of the Ramapo through a tunnel driven under the Hudson River. Later, Bayonne, N. J., petitioned the Department of Conservation and Development for the right to divert 50 million gallons per day from the Ramapo. Although this grant was allowed, the project was blocked for technical reasons by court action. Bayonne's grant provided that 15 million gallons be released to flow downstream daily.

The Wanaque application asks for much less water and under more favorable conditions for downstream river use. This proposal will permit at least 40 million gallons to pass downstream daily. In addition, no water would be taken during dry weather seasons or bathing seasons.

The North Jersey District Water Supply Commission consists of William P. Furrey, Chairman, Paterson; Thomas J. Brogan, Paterson; Mrs. Elsa H. Flower, Clifton; and John G. Flanigan, Jersey City, and Frank Miller, Newark. Charles H. Capen is chief engineer.

Chlorine Dioxide for Odor Control

THE Beaver Falls Municipal Authority, with one of the most difficult water supplies to treat for taste and odor control and, withal, one so arranged that accurate comparative studies can be made easily, has listed the following operating conclusions covering the use of chlorine dioxide:

1. Chlorine dioxide has some value in reducing odors due to phenols.

2. Odors associated with oils and grease, or hydro-carbons in general, are not affected by chlorine dioxide.

3. Some types of algae odors are changed in character, although their intensity is not necessarily lessened.

While these results appear limited in the successful control of odors, E. C. Goehring, assistant manager of the Beaver Falls Municipal Authority, states that the Authority plans to continue the use of the process. Even though the chlorine dioxide will do nothing more than remove the phenols that appear in the winter, it will be worth installing.

Phenols, in this case, result from using water from the Mahoning River and are most pronounced in winter, when temperatures of the water fall below 50°F. Algae problems arise from the use of water from the Shenango River, which uses Pymatuning Lake as its source.

The Beaver Falls Municipal Authority operates two plants situated on the Beaver River: one of 6 million-gallon capacity, opposite the city of Beaver Falls, and one of 4-million-gallon capacity, approximately three miles downstream. This arrangement makes it ideal for experimenting with taste and odor control processes.

It appears to be the experience of the Authority that no one taste and odor control measure is the complete answer in this particular water supply. Chlorine dioxide, chloramine treatment, breakpoint chlorination, and activated carbon all play a part in the production of palatable water.

Mr. Goehring expressed these opinions before the recent Western Pennsylvania Section of the American Water Works Association meeting in Pittsburgh, Pa.

Yes, You're Personally Liable

JUST because you are an agent of the city, Mr. Superintendent, doesn't mean that you can escape personal liability in case of an accident which can be traced to negligence on your part or your department's.* Not only can an injured party bring action against the city, but he can bring it against you as an individual and can hit you where it hurts—right in the pocketbook.

Court Decisions

Take, for example, the case of Campbell v. Powers (March 1913) 155 App. Div. 862. The court made this pronouncement:

"Prior to the statute it was the neglect of the highway commissioner which made him personally responsible, and under the statute it is his neglect which makes the town itself liable. Unless, therefore, the statute which permits the action to be brought against the town exempts him from liability, an action necessarily lies against him as the primary wrongdoer at the election of the person injured . . .

"Our conclusion is that the plaintiff had the right to bring his action against the defendent personally, and that the demurrer to complaint was properly overruled."

Your responsibility revolves around the court's opinion in regard to "reasonable care." Neither a city nor its superintendent may be held liable for injuries resulting from accidents not anticipated in the exercise of reasonable forethought and prudence. (Snowden v. Town of Somerset, 1902, 171 N. Y. 99, 104.) Nevertheless, if you leave a grader on the road and someone collides with it at night, the court may consider this a defect due to your negligence. (Whitney v. Ticonderoga, 1891, 127 N. Y. 40.) If you can present evidence that your town did not provide sufficient funds to operate your department in such a manner as to avoid this difficulty, you have a good defense. (Clapper v. Town of Waterford, 1892, 131 N. Y. 382.) At the same time, however, you must show not only lack of funds but an inability to obtain the same after asking for it and presenting a proper claim for its need. (McMahon v. Town of Salem 1898, 25 App. Div. 1.)

These observations come from C. L. Chamberlain, Chief Municipal Consultant and Special Assistant Attorney-general, made before the convention of the Town and Highway Superintendents' Association, Syracuse, N. Y., and appearing in Vol. 5, No. 11 of the Association of Towns' bulletin, *Highway Topics*.

* See page 131 of this issue for further discussion of this subject.

208	SOUTH STREET AND PIKE SLIP								MANHATTAN H. P.	
ENGINE CO'S	Boat	Res Co	H & L Co's	D. C.	Coll	SPEC.	GOW	Res. Coll	COMPANIES TO CHANGE LOCATION	
									ENGINE	H. & L.
9 15 17	77		6 18		2 4			1		
12 32 ~~4~~ 31 55	66	1	1	1		W.T 1			256–9 205–12 (205-31) ~~25-4~~ 14–17	20–6
~~54~~ 7 ~~20~~ 27	57		15		3		1		209-7 ~~209–25~~	
10 ~~29~~ 6 ~~25~~ 11			~~9~~		5				~~29–29~~ 44–11 26–6 21-10	~~9~~–9
13 33 30 28 5 24			~~27~~						54–33 53–5 34–30	~~27~~–~~15~~
									12-27-40 450	

COURTESY NEW YORK FIRE DEPARTMENT

The assignment card for alarms from Box 208. The crossed-out numbers represent companies no longer in the district.

NEW YORK FIGHTS A FIVE-ALARM

ONE of New York's most recent and severe fires destroyed a five-story warehouse and the $500,000 worth of chemicals and medicinal products it contained. Lost also were several tons of clothing which were to go to Poland's destitute. The warehouse was on waterfront South Street at the Manhattan end of the Manhattan Bridge to Brooklyn. It was of five stories, 50 by 200 feet in plan, with brick extension walls, non-fireproof.

The first of the five alarms was turned in by a passerby at 7:45 a.m. on March 13. At the second alarm, the police stopped traffic on South Street, shunting it into side streets to make way for the apparatus. Several ambulances and three police emergency trucks arrived on the scene. The fifth alarm completed the fire department armament of two fire boats, two water towers, twenty-two pieces of apparatus, and two hundred and fifty men. Present also were Fire Commissioner Frank J. Quayle, Chief of Staff and Operations Frank Murphy, three assistant chiefs, one deputy chief, and five battalion chiefs.

The order in which the apparatus arrived is shown by the accompanying official card for fire-alarm box 208, which covers this location. The first alarm called Engine Companies 9, 15, and 17, Fireboat 77, Ladder Companies 6 and 18, and two battalion chiefs. Acting Battalion Chief Cameron observed that the fire had taken possession of several floors of extensive area. There was no question that a large number of streams was needed to hold the fire and to control it. Chief Cameron at once pulled a second alarm. As the card above shows, this brought four engine companies, a ladder truck, a fireboat, a water tower, and a deputy chief. Simultaneously with this alarm, Brooklyn Engine Companies 256, 203, 205, and 14 and Ladder Company 20 crossed Manhattan Bridge and covered for the Engine Companies 9, 31, 12, 17 and Ladder Company 6, respectively. As the card shows, after the fifth alarm there were eighteen engine companies, three fireboats, four aerial ladders, and a water tower at the scene. Actually, there were two fireboats, the third being out of service, and two water towers. In addition, twelve companies outside the radius from which this apparatus was drawn had moved up to cover this apparatus-depleted area.

Three separate and independent sources of water were available. There was the low-presure (40-50 pounds)

(*Continued on page* 147)

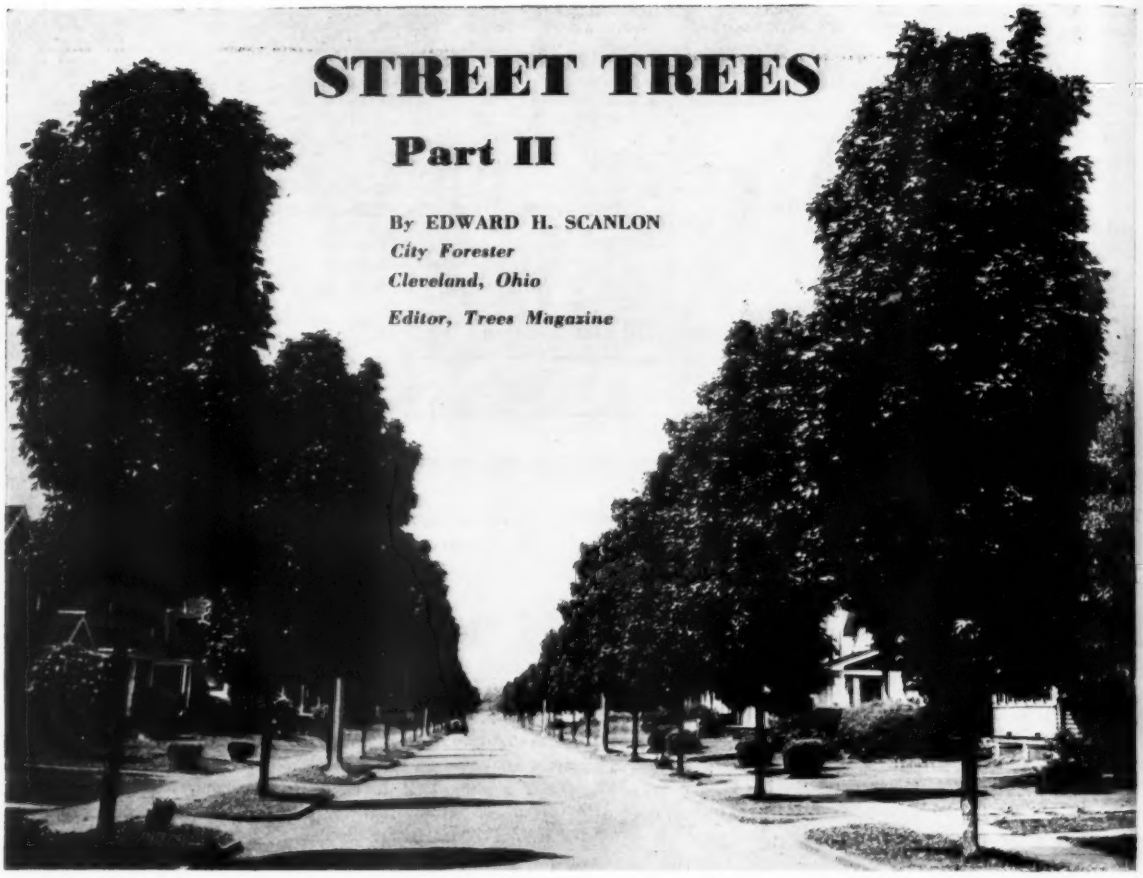
The apparatus was moved back from the front of the burning building because of the possibility of collapse. Note the power and rigidity of the streams to overcome this distance. Note also their angulation: tower streams and deck-pipe streams farthest away are penetrating into the upper floors; the closer deck-pipe streams are going into the lower floors. The stream of water in the background is being used to break up heat waves and protect the building to the north. The line in the foreground was abandoned because it was feared that a collapse of the burning building would affect this adjoining building.

OFFICIAL N. Y. F. D. PHOTO

STREET TREES

Part II

By EDWARD H. SCANLON
City Forester
Cleveland, Ohio
Editor, Trees Magazine



These upright sugar maples on Westfield St., Rochester, N .Y., are thirty-two years old. In the same time-span the parent sugar maple would have grown so large as to have shaded lawns and foundation plantings.

***Trees That Fit* is the key note of this second article on the planning and management of city shade trees.**

IF YOU were buying a home, would you choose one on a street devoid of trees, in preference to one where fine trees grow? The answer is obvious.

Progressive public officials should give very serious thought to the intelligent planning and management of their public trees. They will be rendering the finest of public services—and it is certain they will make far more friends than enemies.

In order to obtain an intelligent plan for the adornment of cities with shade trees, municipalities should put the work in the charge of one who has made a study of trees and who has had much experience in their care. He must know their mature size, their soil requirements, their rooting and branching habits, their insect and disease susceptibility, their ability to withstand conditions that will vary from one section of a city to another. He must know any undesirable feature of a tree, such as the inability to resist wind and ice storms; or whether the tree bears odoriferous fruit or causes unusual amounts of litter. There are many factors in this phase of city planing that can be dealt with effectively only by a competent authority.

Selection of Trees

In addition to the establishment of an adequate maintenance program, the value of which cannot be too strongly stressed, there are several important functions that bear heavily on the success and economy of such a program and therefore, being basic, form the nucleus of any master street-tree plan.

Most mistakes in tree planting, with the resulting overtaxation of maintenance funds, stem from the improper selection of trees for the planting site and the too-close planting of trees.

Compare the neat, orderly appearance of the two streets of trees in the pictures with many of the streets in your city. One is of upright sugar maples; the other, upright American elms. Notice the lawns, unshaded by spreading, far-reaching branches; notice the luxuriant foundation plantings around the homes. Certainly these plantings give dignity and value and a sense of neatness to the street. And these features are obtained with a minimum of maintenance cost. The "uprights" grow naturally in this tight, compact, upright form, without the necessity of expensive pruning. Occasionally a limb must be snipped off here and there, but never is an extensive pruning operation necessary.

While the trees pictured are planted in a fairly wide space (for street trees), a valuable feature of these "tailored" trees is their ability to flourish in a much narrower space. This is their greatest point of value. In so many cities inadequate space has been allocated for trees, and usually a tree entirely unsuited to the restricted space was planted. Such a practice has been

the rule and has resulted in numerous complaints from citizens.

The upright types of tree have much to offer in the planning and management phases of public tree planting. They come about as horticultural "freaks"; to perpetuate their particular form, the arborist must bud or graft on an understock of either the parent species or an equally compatible one. By the nature of their growth, uprights, or fastigiates, as they are known botanically, have a much smaller leaf area, with the result that root and trunk growth are far less over the same number of years in which a normal sugar maple, for example, would develop a leaf area approximately eight times as great, a trunk diameter three or four times as great, and a root system that would expand in the same ratio as the leaf area. This means that a fastigiate tree will endure narrow street-planting conditions almost four times as long as a normal tree. This is a very important consideration in the economy of a city.

In addition to the upright sugar maple and American elm, other fastigiate trees suitable for street use are the upright forms of Norway maple, the black maple, the red maple, the ginkgo, the upright American linden, the tulip tree, the red oak, the English oak, and the Wheatley elm. A fine flowering variety is the upright Sargent cherry.

Leaving the upright tailored trees, we come to others that should be considered for situations where their characteristics adapt them for use. *Acer leucoderme*, the chalk maple, is a miniature sugar maple in every respect. It rarely exceeds twenty-five feet in height—and it never develops a huge buttressed trunk that ruins the curb and sidewalk. There are several varieties of Chinese cork tree: *Phellodendron amurense*, *P. sachalinense*, and *P. lavallei*, which, though they have a rather wide spread, do not attain great height. Height is an important factor in maintenance cost and should be controlled. *Acer campestre*, the hedge maple, is a nice small tree; *Eucommia ulmoides*, the hardy rubber tree from China, should be used more widely; *Zelkova serrata*, the Sawleaf zelkova, a member of the elm family, is a handsome small tree that should be used more widely.

The trees mentioned here are only a few of the many that should be considered in laying out a master tree plan of *trees that fit;* but we have saved two of the handsomest trees to close our discussion. Flowering trees have been widely used on streets in California and Florida, but their use in the colder climates has been negligible. In the late summer when few things are in bloom, the lovely *Sophora japonica*, the Chinese Scholar tree, and *Koelreuteria paniculata*, the goldenrain tree, come into their own. The *Sophora* comes into bloom late in August with creamy white blossoms and, as the picture shows, becomes a huge bouquet. It is a durable, drought- and smoke-resistant tree, maintains a round, compact crown, and generally will not exceed thirty-five feet in height. Avenues of *Sophora* would be breath-taking.

The goldenrain tree has huge panicles of yellow flowers and blooms in mid- or late July. It, too, is a tree of small stature, rarely exceeding twenty-five or thirty feet in height in the latitude of Cleveland. Also, like the *Sophora*, it is tough.

Trees that fit are the answer to all city tree conditions of today. To select them and maintain them requires knowledge; but it can be and is being done.

To augment the planting of suitable trees, many new developments in the equipment line, and some not so new, are available to help cut that maintenance figure and spread the dollar over a wider number of operations. The most recent development is the mist-blower sprayer. This spraying machine for city work is faster, uses fewer men, disregards parked cars, and uses virtually every drop of spray material. There is also the gasoline-powered chain saw, a tremendous time saver in removing and bucking up trees. The earth drill will expedite hole-digging in the planting program. The gasoline-powered jack-hammer is for use in cutting roots in tree removals.

Numerous other devices are available for the planned, economical shade-tree program, but first of all a beginning must be made. We should put a stop to promiscuous planting, too-close planting, and lack of consideration of all the factors that dictate the selection of *trees that fit*.

The trees in the picture above are an improved variety of American elm. The thirty-seven-year-old trees have small trunks and a graceful shape. The hardy Chinese Scholar tree (above right) should be used more widely.

AN AMERICAN CITY STAFF REPORT

Summarizing the Sanitary Fill

THE CITIES' APPRAISAL OF THE SANITARY FILL

CITY	SUPERVISION	EQUIPMENT	COMMENTS
Alexandria, La.	Soule Butler City Engineer	Tractor-Bull Clam	Highly satisfactory. Eliminates unsightly garbage dumps; is free of flies and rats
Ashtabula, Ohio	Ronald Logan, Superintendent of Public Works	Bull Clam and 60-hp Cletrac tractor	Fill well compacted, free from rats and odors. Complaints limited to loose paper
Barberton, Ohio	Harry Bushey City Engineer	.....	Using fill successfully
Bellingham, Wash.	E. W. Gooch City Engineer	.....	Using method successfully
Birmingham, Ala.	J. D. Webb City Engineer	.....	Using fill successfully
Bradenton, Fla.	D. H. Tallant Superintendent, Sanitation Department	Bull Clam	Have been using trucks and fill methods for some years
Clayton, N. Mex.	Manson Edmondson City Manager	Bull Clam	Has worked very satisfactorily
Columbia, Mo.	H. A. Gadd Director of Sanitation	Allis-Chalmers tractor and Bull Clam	Using to build portions of airport
Cuyahoga Falls, Ohio	T. H. Sauter City Engineer	Not listed	Fills abandoned. New incinerator under construction
Davenport, Iowa	Ralph C. Graham Superintendent of Public Works	.....	Using method satisfactorily
El Paso, Texas	E. F. Muckelroy Superintendent of Sanitation	Caterpillar tractor with Bull Clam	Like it very much. Filling lake. Reclaiming park land
Fort Worth, Texas	R. R. Lacy Superintendent, Waste Disposal Service	Bull Clam	Works excellently. Using two or more fills with smaller machines doing the covering
Grand Island, Nebr.	J. S. Olewine Sanitarian	Dragline bulldozer	Since starting method have eliminated rat nuisance. Methods works very satisfactorily
Greenville, Texas	T. S. Mitchell, Commissioner Light, Water and Sewer	Bull Clam	Getting very good results
Hondo, Texas	J. A. Horger Mayor	Bull Clam	Using method successfully
Johnson City, Tenn.	M. V. Snoderly City Manager	Bull Clam	"No comparison for cities this size between this and incineration"
Lake Worth, Fla.	Tom Smith Mayor	.....	Very satisfactory
Lexington, Ky.	M. J. McGruder City Engineer	Bull Clam	Using fill successfully
Lincoln, Nebr.	D. L. Erickson, Director Parks, Public Property, and Improvements	1¼ cu. yds. dragline Caterpillar bulldozer	Has been very satisfactory. Rats have been eliminated, virtually no odors or flies—open dump previously was burning, dangerous, and infested with rats and flies
Lubbock, Texas	J. A. Stanley City Sanitary Engineer	2-yd. Bull Clam on 60-hp. Cletrac tractor	Recently started
Muscogee Co., Ga. (suburb of Columbus)	J. A. Willman Public Health Engineer	1 Bull Clam	Good results. Well satisfied. City abandoned incinerator
Pensacola, Fla.	O. J. Semmes, Jr. City Engineer	One ½-yd. drag line One D-4 bulldozer	Satisfactory
Port Neches, Texas	James Ruth Director Water and Sewage Systems	Bull Clam	Using method successfully
Salisbury, N. C.	J. A. English City Engineer	Bull Clam	Using fill successfully
Salt Lake City, Utah	Reed S. Haslem Superintendent of Commercial Sanitation	.....	Using method satisfactorily
San Francisco, Calif.	N. C. Vensano, Director Department of Public Works	Draglines bulldozer	Has given satisfactory results during the past ten years, will give satisfactory results during next ten, which will probably exhaust the supply of fill material. Incineration will probably cost 50% more than sanitary fill
Seattle, Wash.	C. L. Wartelle City Engineer	.....	Disposes of about 1,000 tons daily
Sherman, Texas	J. L. Hardy City Engineer	Bull Clam	Using method satisfactorily
St. Petersburg, Fla.	Stanley Pinel Director, Public Works	Dragline	Have been filling underwater and getting interesting results
Sturgeon Bay, Wis.	E. S. Ackerman City Clerk	Bull Clam tractor	Very well satisfied. Eliminated breeding place for rats and flies
Tacoma, Wash.	J. R. Scheideman Superintendent	.....	Using method successfully
Topeka, Kansas	W. E. Baldry City Engineer	Bull Clam	Use for disposal of trash but not garbage. Eliminates rodents, dump fires. Produces attractive land fill
Velasco, Texas	H. A. Thomas Superintendent	Bull Clam	Using method successfully
Wenachee, Wash.	James Dunston City Engineer	.....	Using method successfully

HOW does the sanitary fill work? Is it taking a significant place in our municipal operations? Is it fulfilling expectations, and will we continue to see its use grow?

These are all fair questions that an earnest administrator would normally ask when analyzing his own city's refuse disposal problems. And they are questions that are hard to answer coolly. At a recent American Public Works Association Congress held in Fort Worth, Texas, some officials acidly denounced the sanitary fill, stating that, contrary to its name, it was not sanitary; it was only another form of open dump. Others who used the fill objected just as sharply, saying that there was nothing wrong with the fill that careful operation would not cure.

Viewing the matter strictly from a sanitary standpoint and disregarding the economics that always are involved, one can list refuse disposal methods in the order of their desirability, as follows:

1. A well-designed, well-operated incinerator.
2. A well-operated sanitary fill.
3. A poorly operated incinerator.
4. A well-maintained open dump.
5. A poorly operated sanitary fill or open dump.

There is no doubt that an efficient incinerator, properly operated, does an excellent job in reducing a city's refuse. It destroys the organic matter that may be a potential health hazard. It reduces the bulk to 5% or 10% of the original volume, and makes this residue into an inoffensive end product that can be used without difficulty for a fill material. Fills made from incinerator residue are stable and have high bearing values; and land so reclaimed can be used by any normal business, commercial, or recreational activity.

As an added advantage, the incinerator, if it is well designed and well operated, can be located convenient to the area of collections, thereby cutting the collection cost, which is actually the largest item in refuse disposal. Not many cities capitalize on this very real advantage.

The biggest stumbling block in the installation and use of incinerators is their cost. Lt. Col. C. A. Deason, Fort Sam Houston, Texas, has made estimates that, prior to the war, a city could easily spend $150,000 for a 50-ton incinerator, and roughly between $1.25 and $2.50 per ton operating it. In contrast, he points out that a city can buy equipment to operate a sanitary fill for less than $15,000—and operate it for $.40 to $1.00 per ton of refuse.

There are several "if's" in these estimates. Most of them are intangible and do not appear in a standard balancing of costs. More land is required for the sanitary fill. Fort Worth estimates that from 8,000 to 10,000 cubic yards of refuse can be disposed of per acre by this method. Moreover, the sanitary fill does not immediately destroy any material: it merely hides it. Possibly after a period of time—and that time will be measured by decades—the volume will be deduced by the destruction of organic matter by anaerobic digestion. Present studies throw no reliable light on this possibility.

With the fill completed, the land use must be restricted. Generally, the filled land can be used best as parkland and recreational area.

If it is used for building where basements are involved, there is a chance that methane gas from the digestion of the organic matter may seep into the basement and cause trouble.

A LIST OF CITIES DISPOSING OF REFUSE BY THE SANITARY FILL METHOD

(Not mentioned in the table on the lefthand page.)

ALABAMA
Opelika

CALIFORNIA
Alameda
Berkeley
Fresno
Oakland
Palo Alto
Pomona
Richmond
Sacramento
Salinas
San Leandro
Santa Barbara
South Pasadena

GEORGIA
Savannah

ILLINOIS
Rockford

INDIANA
Columbus

IOWA
Council Bluffs

KANSAS
Pratt

KENTUCKY
Louisville

LOUISIANA
East Baton Rouge Parish

MAINE
One community of 600

MISSISSIPPI
Biloxi
Gulf Port

NEW MEXICO
Clayton

NEW YORK
New York

NORTH CAROLINA
Asheville
Charlotte
Wilmington

OKLAHOMA
Oklahoma City
Tulsa

TENNESSEE
Knoxville (city)

TEXAS
Brownwood
Dallas
Freeport
Midland
Monahan
Odessa
Pasadena
Orange
Pecos
San Antonio
Temple
Tyler
Waco
West Columbia
Pelly
Texas City

UTAH
Brigham
Logan
Midvale
Murray
Ogden
Price

VIRGINIA
Elizabeth County
Richmond
Warwick County

WISCONSIN
Marshfield

The following states have no sanitary fills: Arizona, Arkansas, Colorado, Connecticut, Delaware, Idaho, Massachusetts, Michigan, Missouri, Montana, Nevada, New Hampshire, New Jersey, North Dakota, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Vermont, West Virginia, and Wyoming.

By **WILLIAM S. FOSTER**
Engineering Editor

We rarely find a public health authority criticizing the sanitary fill. There are some. One states that he has found ". . . few fills that are either adequate or sanitary. . ." These comments, however, are the exception rather than the rule. More often, health authorities are enthusiastic and are grateful for the service that the fill performs in eliminating the rat- and insect-ridden open dump. Recently, the Health Advisory Council of the U. S. Chamber of Commerce issued a publicity brochure to all its members, urging the adoption of the sanitary fill as a health protecting development to replace the old open dump.

Engineers seem the most critical of the fill. They object chiefly for operational reasons, rather than for reasons of public health. Curiously, we find some of the opposition coming from officials whose cities feed the garbage to hogs—a practice long frowned upon as dangerous to the public health.

Will those who use the sanitary fill continue to use it? This is a fair question, and an examination of the record may indicate the answer. Those who have abandoned it are not numerous; but they are significant. Rochester, N. Y., tried the method briefly at one time and discarded it. The Washington Suburban Sanitary District in Montgomery County, Md., also abandoned it because dumping areas became so scattered that hauling costs became excessive. New York City, under the regime of Mayor William O'Dwyer, plans to abandon its sanitary fills. Cuyahoga Falls, Ohio, will discontinue its sanitary fill as soon as its incinerator is completed.

In contrast, Columbus, Ga., is cancelling the operation of its incinerator in favor of landfill operations for economic reasons, and the list of those cities supporting the sanitary fill is impressive.

In summarizing, experience seems to indicate that the sanitary fill finds particular favor in cities with an abundance of available land area which will not be needed for business or industrial purposes later. It is economically useful to the small city that is unable to build an incinerator, and it is a useful stopgap measure for larger cities that have not yet completed incinerator projects. If a large city has convenient areas where this filling operation can take place and has skilled personnel to operate it, it may very well find that the sanitary fill is a permanent, economical method of refuse disposal that meets exacting public health requirements.

Planning Triumphs Over Anarchy

A scale model of Bath's city-to-be was displayed in the Guildhall, with details of present conditions and future plans pointed up and illustrated by photographs, charts, watercolor sketches, and models of proposed buildings.

Bath, England, will restore its shattered city, retaining the historical beauties of the town while building for a modern culture.

By DOROTHY ARCHIBALD
Member of the London County Council

SITUATED in the West Country on Shakespeare's lovely Avon, Britain's "Queen of Cities" was first planned and built by the Roman army of occupation round the hot sulphur springs in which the legionnaires soaked their rheumatism. Bath passed through the Middle Ages without basic change. Within the defensive city walls, narrow, tall, medieval houses clustered round the magnificent Roman Bath. The lovely Abbey Church rose in the heart of the Roman city.

As roads developed, the fame of the hot medicinal water spread, and Bath became a centre of fashionable life.

The resulting demand for houses and lodgings in the 17th and 18th centuries forced the city to burst its medieval confines. By extraordinary good fortune, three or four architects of genius planned and built the neo-classical developments of the city. Working in the lovely golden local stone and retaining the Roman plan as their basis, they flung out the long classical terraces, the wonderful curved circuses which make Bath one of the architectural marvels of the world.

The growth of the working-class population in the 19th century and the absence of any town planning led to the vulgarisation of the city. Factories and railways were allowed to build along the banks of the Avon. A sprawl of cheap little houses covered some of the sloping hills round the city. Between the two world wars the city council built many beautiful workers' homes of the famous local stone, with good planning and green open spaces. Unfortunately, the supply never met the demand.

Then the Blitz came to Bath. In two nights of horror hundreds of little homes were destroyed, though, miraculously, nearly all the famous buildings survived. This produced a terrible housing problem, for Bath had already nearly doubled its population. Branches of the Civil Service and mothers and children had been transferred there from London, workers had come to be near their jobs in the new war plants, soldiers of all nations swarmed in the narrow streets. In 1944 the city council invited one of England's most distinguished architects and town planners (Sir Patrick Abercrombie), in collaboration with the city engineer and the city architect, to prepare a master plan for the rebuilding of Bath. The plan was completed in January 1945. It is a comprehensive and detailed one, covering not only urgently needed building projects, but the whole future development of the city.

The plan is based on the belief that Bath is just about the ideal size for a city, and its population should be kept within a few thousand of its present number. Further, it is considered an optimum city in its social balance, but the population is too thickly concentrated in the centre of the city. The plan proposes to spread it out and to allow for a little growth by developing "neighborhood units"—each complete with schools, shops, churches, cinemas, community and health centers, comprising a well-balanced community for all income levels. The neighborhood units will be situated a few miles outside the city, linked to it by good transport facilities.

Problems to Be Solved

For the old city the plan has attempted to solve many very difficult problems:

1. To preserve and increase all the beauties that make it a favorite holiday resort and goal for tourists from all countries.

2. To encourage use of the hot sulphur springs by building a first-class rheumatism research center and hospital.

3. To preserve all the old houses of historical and architectural importance and make them socially useful. (For instance, the beautiful terrace houses, too big and inconvenient for modern domestic life, will be turned into flats or civic offices).

4. To solve traffic problems, acute in so old a city, by by-passing the through traffic.

5. To develop blitzed areas in the center of the city with fine concert halls, hotels, public gardens, a great bus terminal, restaurants, etc.

6. To restore banks of the Avon to public enjoyment. Swimming pools,

boating, gardens and gymnasia will take the place of factories.

7. To put industrial facilities in a special zone.

The list gives an inadequate outline of a tremendous and visionary piece of work. How to sell so revolutionary a plan to the citizens? The planners knew how to do that, too.

The City Engineer produced an exhibition. Every part of it was made by his regular staff in his own department. The war was still on, and the Blitz had put a great strain on the Engineer's department. They were overworked and under-staffed; but they worked day and night voluntarily and built a masterly exhibition, which was shown in the Guildhall.

In the center of the great room was an enormous scale model of the city-to-be. Round the walls were photographs of the city as it is, flanked by drawings of the buildings proposed. Interspersed were imaginative colored charts that showed at a glance what the plan meant in terms of population shifts, new schools, open space, etc. Scale models showed the houses of the future inside and out, the special provision of housing units for the aged, etc. And, to heighten interest, lovely watercolor sketches were hung here and there, showing the planners' vision of the new buildings—to be built, not in imitation of, but in harmony with the great architectural tradition.

Enthusiastic guides from the Engineer's department conducted visitors around. The people of Bath thronged to see the exhibition. Opened originally for a month, it had to be kept open for two. And the citizens believed that this was the city they were going to have.

Then the trouble began. Vested interests began to fight against proposals which in some cases involved business sacrifice. Bit by bit the plan was being whittled away, but the counter-attack was not difficult, because the plan had sold itself. Individuals and organizations who had worked for years to convert Britain to planned community building swung into action. Architects and planners addressed meetings of every club, organization and association in the city. The local press was filled with letters. The Labour Party, The Co-operative Womens Guilds and the trade union movement in Bath put all their support behind the plan, and it went through.

Planning triumphed over anarchy and, as the new Bath rises, it will be a unique city in which the genius of the Romans and of the 18th century architects is preserved and harmonized with the needs of a modern balanced community.

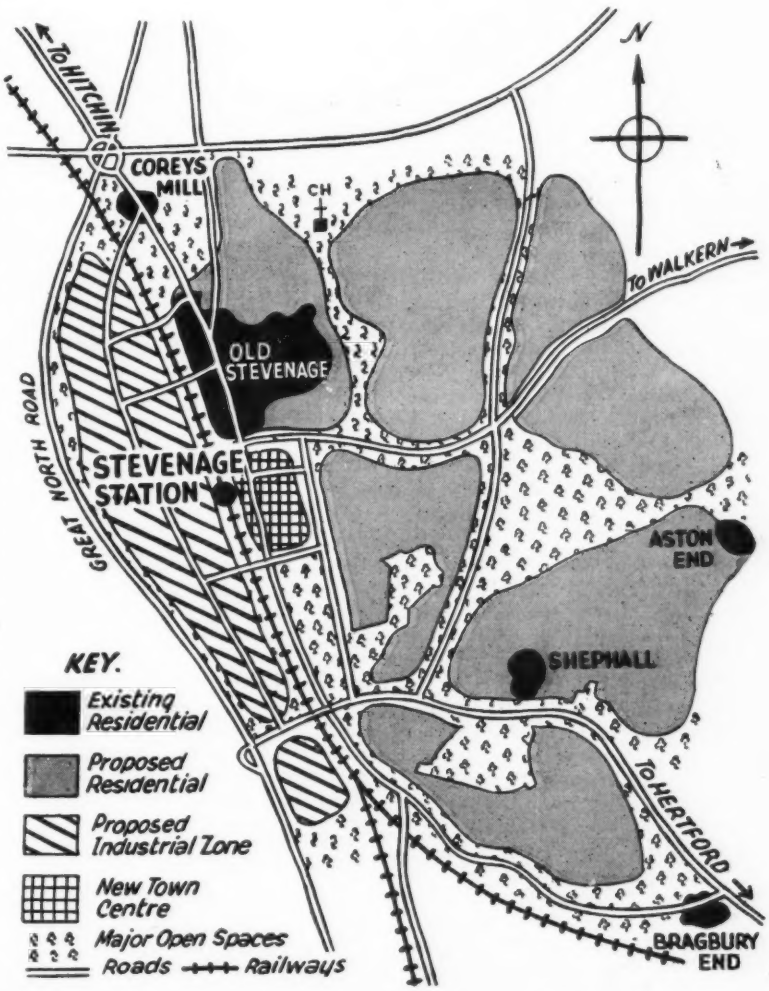
First of the New Towns

A self-contained community will be developed in and around the market town of Stevenage, England.

THE Court of Appeals in Great Britain last month reversed a lower tribunal's decision and approved the Government's plan to acquire land and develop a new, self-contained, balanced community of 50,000 persons in the ancient Hertfordshire market town of Stevenage, which is near London and has a population of 5,500.

Members of the Development Corporation for the town have been named and its outline plan has been completed by Gordon Stephenson, Chief Senior Technical Officer of the Ministry of Town and Country Planning. The Government's move had been contested by some of the town's inhabitants on the grounds that the Minister of Town and Country Planning had shown bias in designating the Stevenage area without considering their objections.

Stevenage is the first of the new towns to be developed in the Greater London region under the powers granted in the 1946 New Towns Act. The site had been suggested in the Greater London Plan of 1944 as one which should be expanded in population. It was one of many which had been carefully studied and surveyed before the public inquiry to consider objections that might be raised to the plan.



Industry is centered around the railway and isolated from the residential section, while the new town center is placed strategically between them.

Public inquiries have been held in at least four other areas where the building of new towns is contemplated, including Crawley, Sussex; Harlow, Essex; Hemel Hempstead, and East Kilbride, Lanark. The Town and Country Planning Bill of 1947,* if enacted, will greatly expedite and facilitate the building of these new towns.

Among the advantages which make Stevenage suitable for early development are its location in relation to London and the manufacturing area of the North and Midlands; its main-railway and road transport facilities; the existence of a thriving industrial nucleus and the existence of an established shopping center and of certain social amenities.

The designated area includes all the land likely to be needed for building purposes, as well as a 5,000-acre peripheral green belt for recreational purposes. A government-sponsored development corporation, which will be able to borrow from the Exchequer, will be responsible for planning in the area and for building the community. It will also have the power of "compulsory purchase" for the entire site and can retain this land in its possession, leasing it out on a long-term basis for various community and industrial purposes.

It is expected that the detailed plans which are prepared by this corporation for the area will be publicly exhibited, and that there will be another public inquiry on them before they are approved by the Minister of Town and Country Planning. In planning the town, every endeavor will be made to avoid interfering with existent buildings. Buildings that must be demolished will not be taken down until absolutely necessary. It will be the corporation's duty to see that people who are displaced are given the opportunity to secure other accommodations in the new town.

It will be the intention, in developing Stevenage, to provide for the growth of industry and commerce concurrently with the increase of population, in order to provide ample local employment opportunities. Positive action will be taken to prevent it from becoming a commuters' town by providing accommodations predominately for those who wish to live and work in Stevenage.

The surrounding rural area will remain agricultural, and the area's villages will continue to serve as centers for the farming communities. Before requiring displacement from the farms in the town area, adequate notice will be given, and the Minister of Town and Country Planning will consult with the Ministry of Agriculture and Fisheries to determine what the effect will be on food production in general for Britain.

The British national policy, as embodied in the New Towns Act of 1946, is to build new towns as part of the process of redeveloping older cities. This position is well stated in a paragraph from the *Interim Report of the New Towns Committee*, as follows:

> The twin evils of slums and overcrowding date mainly from the early years of the last century. They have their roots in the unregulated and excessive growth of towns during a period when the health of the people, no less than their spiritual and social well being, was sacrificed to industrial progress. Men must live near their work. Yet only in recent years has come a realization that the solution of the many problems to which these evils give rise, to say nothing of the spoliation of the countryside by ill-considered building, is by setting some limit to the haphazard sprawl of our existing cities and by providing in new towns, wisely sited and skilfully planned, a proper balance between housing and industry.

* See pages 5, 67, 94, and 95 of THE AMERICAN CITY for February, 1947, for extended comments on this important measure.

National Housing Bill Receives Municipal Support

INTRODUCED last month by Senators Robert A. Taft, Allan J. Ellender, and Robert F. Wagner, the National Housing Commission Bill (S 866) is receiving substantial support from municipal officials and others concerned with urban blight and slum clearance. Its provisions are very similar to those contained in the General Housing Bill of last year, which was approved and passed by the Senate, but pigeonholed by the House Banking and Currency Committee in the rush before adjournment.

Mayor George W. Welsh of Grand Rapids, Mich., president of the United States Conference of Mayors, and former Mayor F. H. LaGuardia and Mayor William O'Dwyer of New York City are among the representatives of municipal interests who have lent vigorous support to the general objectives of the new bill before the Senate Banking and Currency Committee hearings.

The Taft-Ellender-Wagner bill, as it it now known, lays down a policy of "realizing as soon as feasible the goal of a decent home and a suitable living environment for every American family." It provides for a permanent National Housing Commission composed of an Administrator (with his administrative staff) and a Coordinating Council, to consist of the Administrator, the heads of the Federal Home Loan Bank Board, Federal Housing Administration, and Federal Public Housing Authority, and representatives of other related Federal agencies, to be designated by the President. All of the powers of the Commission, however, are vested in the Administrator.

Titles of Municipal Interest

Titles VII, VIII, and IX of the bill are probably those of most interest to municipal officials.

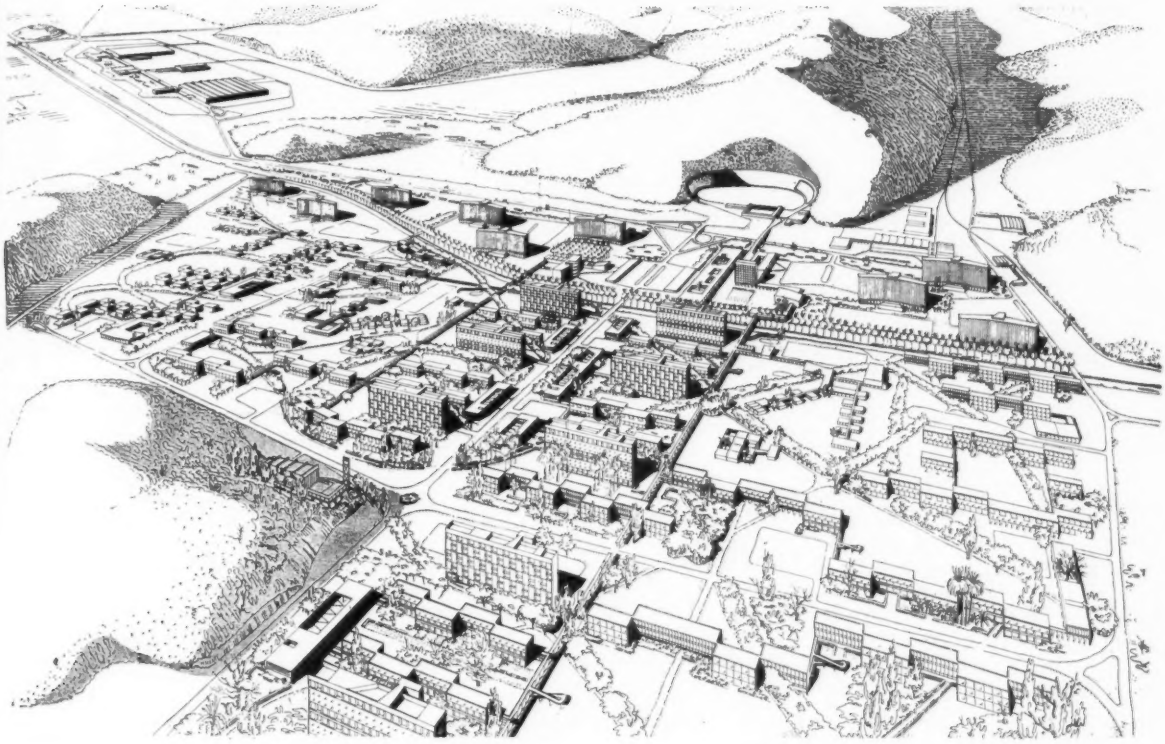
Title VII provides for a special program of yield insurance, to be administered by FHA, designed to encourage direct investment by institutional and other large-scale investors in rental housing for families of moderate income. A billion-dollar, self-sustaining insurance program is contemplated.

Title VIII sets forth a program of federal aid to localities for the clearance of slums and blighted areas, so as to make such areas available for redevelopment with the active participation of private enterprise. Federal and local aid will be combined to bring the cost of land acquisition and preparation for redevelopment down to the point where its reuse, in accord with sound planning principles, will be feasible. Local contributions must equal at least one-third of the net project cost (the difference between the cost of the project and the new capital value or reuse value of the project area land) and at least one-half the Federal subsidy base. It is expected that the aids in this title will be enough to cover about 1½ billion dollars of land acquisition and preparation for redevelopment.

Title IX resumes the public low-rent housing and slum clearance program needed to serve those families whose incomes are so low that private enterprise, even with the improved aids in the bill, cannot hope to service them. The title would cover not more than 500,000 units of public low-rent housing, to be built over a four-year period.

Other titles of the bill improve FHA procedures and requirements for home ownership and rental housing aids; call for technical research in housing and the provision of advice and guidance to communities for local housing studies, surveys, and planning; make available federal contributions for farm and rural non-farm housing; facilitate disposal of FPHA war housing to local public agencies.

Brazil Plans Entire New City



This perspective drawing, reproduced from *Progressive Architecture*, gives some indication of how the city of motors—Cidade dos Motores—will look when completed.

The existing airplane engine factory and the highway leading to it are at the left. The dormitories and sports arena will be on the far side of the highway.

Construction is being pushed on the roads and bridges for a completely new Brazilian community of 25,000 which has been planned in accordance with modern, scientific, sociological, and industrial principles. The city, named Cidade dos Motores—City of Motors — will rise on what was formerly swamp land acquired, drained, and made malaria-free by the Brazilian government in 1941. Situated on a 12,000-acre site some twenty-five miles from Rio de Janeiro, it will be the first modern city to be built under Brazil's new industrial program.

The idea for the city was an outgrowth of the location of an airplane engine plant there during the war. This factory, which already has some 2,000 full-time employes, is now being converted to the production of tractors for farm use, an urgent Brazilian need. It will manufacture other industrial machinery as well. Brigadier-General Antonio Muniz, in charge of the whole regional development, recognized early the necessity for planning the area if the chaos which exists in most industrial cities was not to be repeated. As a result of his foresight, Paul Lester Wiener and Jose Luis Sert, town planners and architects of New York City, were commissioned by the Brazilian government in May 1943 to draw up the master plan within flexible outlines and to prepare the working drawings.

The completed plan charts the course of development of the city and the region, to be financed with Brazilian funds, for a period of about ten years.

Neighborhood Planning

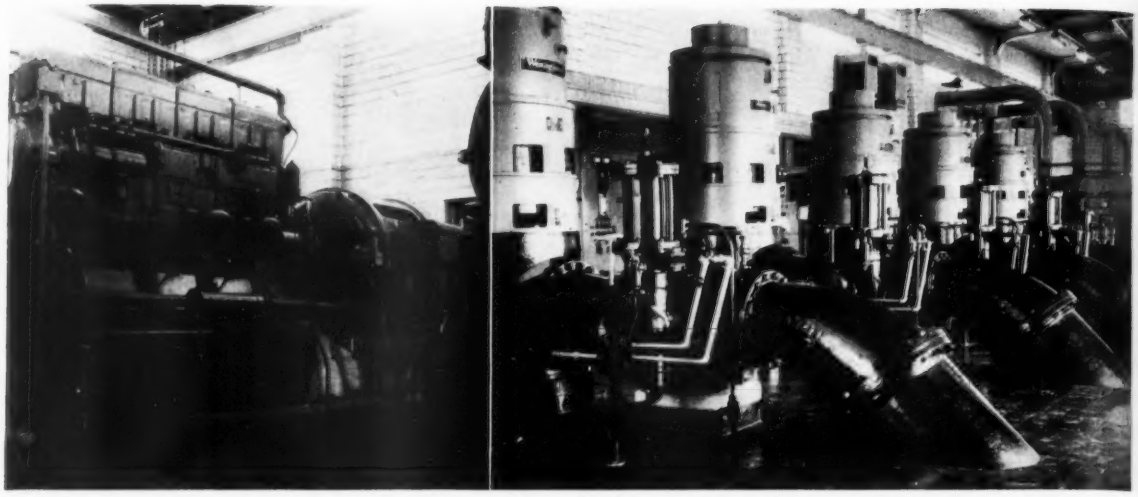
Population density will be about one hundred persons per net acre. Planning has been kept to the scale of the pedestrian, with the average walking distance to the civic center being less than a quarter of a mile. Peripheral roads allow for automobile access to the neighborhood. Inside the neighborhood units, however, all traffic is by foot or by bicycle paths under covered trafficways which afford protection from the tropical sun.

In each neighborhood there will be churches and recreation and educational areas. Here will be kindergartens, elementary schools, dispensaries, centers for pre-natal care, a lactorium for milk pasteurization, swimming pools for adults and children, and community clubs. Each neighborhood will have several thirty-crib creches for babies under two years old. There will also be play and meeting rooms for adult education. Surrounding the neighborhood units will be laundries, repair shops, grocery stores, bicycle parking spaces, and management offices.

Housing will consist of eight-story and three-story apartments, built around tropical gardens and constructed from standardized and mass-produced building parts. Rentals, gaged at a percentage of the wages paid at the factories, will compare favorably with those charged elsewhere.

Civic Center

The important civic center groupings will consist of administrative, amusement and commercial buildings, a cultural section, and a sports section. It also features a "praca" or town square, built so that the whole community can take part in gatherings and festivities.



Left: Continuous power is made available to Houston's new Southwest Pumping Station by generator sets. Right: These electrically driven well pumps form the heart of the station. They transfer water to a steel reservoir, then to the mains.

Houston, Texas, Takes First Step in Water Program

New Southwest Pumping Station is step toward linking Houston's seven well fields and the San Jacinto River supply into one interconnected system.

HOUSTON'S new Southwest Pumping Station is only a step in this city's water supply program—a step that involves 30 million gallons daily out of a present available supply of 75 mgd. The supply will be enlarged in the immediate future to 100 mgd and will reach 200 mgd in 1970.

Houston operates seven well fields, each with a high-lift station. The new Southwest Station receives power to operate from the local electric utility. It insures continuity of service through a stand-by motor-generator arrangement drawing on a set of four Sterling Viking engines powered by natural gas. Each of these engines, with a 600-hp rating, connects to a Westinghouse generator that will produce 500 kw of power at an 80% power factor. They, in turn, furnish power to a set of six Layne-Texas booster pumps that transfer the water to a 25-million-gallon steel reservoir, and thence as required to the mains. One of these booster pumps has a capacity of 9100 gpm; Three can pump 8200 gpm and two, 4000 gpm.

The pumping station has been studied carefully with a view to providing maximum continuity of service in case of valve or pump repair. The design selected has the following advantages:

1. Any pump can be shut down without affecting any other pump.
2. Repair to any of eight valves in the header will shut down only one of the pumps. Repairs on any one of four valves in the header will shut down one pump and one feeder.
3. The manifold can be extended when needed for increased station capacity.
4. Future feeders can be connected from header to mains in any direction.
5. All station gate valves are placed horizontally, with bevel gears and square operating nuts to be operated with a power wrench, assuring quick opening and closing in an emergency. The placing of the valves horizontally will eliminate the possibility of a broken valve stem allowing the gate to drop into the seat and closing the valve.
6. All pipes have been kept close to the surface of the ground, reducing excavation and eliminating all valve vaults and enclosing structures. This is possible in Houston because there is practically no frost line below the surface of the ground.

Work is under way to interconnect each of the seven pumping stations and their well fields by building arterial mains to each. Thus any area normally served by a station will be supported from others in the event that service from its own station is interrupted temporarily.

Plans for the development of the San Jacinto River for a supplemental surface supply have developed to the point where bids may be taken whenever stabilization of prices permits. Bids were received for the construction of a dam, but these were rejected because of excessively high prices. The reservoir will have a capacity of 162,000 acre-feet at normal pool level.

The first unit of the filter plant will, however, be built immediately, thereby furnishing plant capacity of 25 mgd, which can be drawn from the San Jacinto river without the need for impounding. According to present plans the city will furnish either raw or treated water to industries along the Houston Ship Canal.

The demand for water in the metropolitan area last year averaged 118 mgd, of which about 50 mgd has been furnished by the Houston Municipal Water Works, and the rest by privately drilled wells. As time goes on and the ground water table gradually drops, officials expect that the city will be called upon to furnish most of this demand required.

Build Quality Into Asphalt Streets

By CHARLES A. MAYER
Assistant Engineer
The Asphalt Institute
New York, N. Y.

THE first experimental hot-mix asphalt sheet paving was laid in Newark, N. J., in 1870. It proved so adaptable to the changing mode of transportation, from the horse and buggy to the heaviest motor traffic, that now there are far more asphalt surfaces on American streets than all other pavements combined. In 1946, over $250,000,000 was invested in asphalt plant mixes in this country. In 1947, there will be the greatest demand ever made for this product, but this need has been anticipated by the asphalt refiners, and an adequate supply is assured.

Qualities of Asphalt Pavement

Asphalt has a resiliency and a quietness that is comfortable to both pedestrian and rider. An inherent quality of flexibility allows vehicular traffic to smooth out the pavement. It is not damaged by ice-melting chemicals. It is waterproof and is easily kept clean. Repairs can be made rapidly and traffic restored quickly. In emergencies, work has often been done successfully in zero weather and in snow and rain. With a sandpaper-texture finish, it is the least slippery in wet weather of all types of pavement, according to Professor R. A. Moyer of Iowa State College. Asphalt has a long life, and many good pavements are over thirty-five years old. Asphalt may be laid to the feather-edged thinness of a dime, without having the structural weakness of so thin a sheet, because it binds itself to the lower layer of asphalt pavement, increasing the structural strength proportionately, and the original pavement may be salvaged at a comparatively low cost. Asphalt pavements may be designed for special traffic conditions, and they may be constructed to withstand acids.

The qualities of a good asphalt pavement are not obtained by accident, hit-or-miss methods, or the belief that it is foolproof. Quite the contrary: quality must be built into the pavement from beginning to end, and there is a definite procedure that must be followed. Starting in the laboratory, all the materials have to be tested and combined until the job-mix formula is determined. Then, by a study at the plant, the paving-plant formula is ascertained, and manufacturing proceeds under competent inspection to safeguard full compliance with the formula. The thickness of the pavement is determined by studies of the base and of traffic requirements. The laying and rolling must be done in accordance with standard specifications. Competent inspection is essential throughout, in order to close the gap between design and practice and make certain the product will be a good asphalt pavement.

TABLE I
HOT-MIX ASPHALTIC CONCRETE

Mix No.			I	II	III	IV	V
Courses for which recommended			Lower or Intermediate		Intermed.	Surface	
Min. thickness individual course			3″	2½″	2″	1¼″	1″
Max. thickness individual course			2½″	3½″	3″	2½″	2″
Mineral Aggregate Combination							
Constituent	Passing Sieve	Ret. on Sieve	Percent by Weight	Percent by Weight	Percent by Weight	Percent by Weight	Percent by Weight
Coarse Aggregate	2″	1″	15-45	....	....	....	....
	1½″	¾″	....	14-48	....	....	....
	1″	½″	3-45	....	17-52	....	....
	¾″	⅜″	....	3-45	....	18-50	....
	½″	⅜″	....	....	....	....	8-39
	½″	No. 4	....	....	6-42	....	....
	⅜″	No. 4	....	....	....	3-36	8-45
	No. 4	No. 10	5-15	5-15	5-15	9-22	9-27
Sub total	....	No. 10	60-80	55-75	55-70	50-65	50-65
Fine Aggregate Filler	No. 10	No. 40	3-19	3-21	4-20	5-22	5-22
	No. 40	No. 80	5-22	6-25	8-25	9-27	9-27
	No. 80	No. 200	3-15	3-16	4-16	5-18	5-18
	No. 200	....	3-5	4-6	4-7	5-8	5-8
Sub total	No. 10	....	20-40	24-45	30-45	35-50	35-50
Total Mineral Matter			100	100	100	100	100
Total Mix							
Total Mineral Aggregate			93.5-95.5	93.0-95.0	93.0-95.0	92.0-94.0	92.0-94.0
Asphalt Cement (Bitumen)*			4.5- 6.5	5.0- 7.0	5.0- 7.0	6.0- 8.0	6.0- 8.0
Total Mix			100	100	100	100	100

* For highly absorptive aggregates the upper limit may be raised.

Permissible Variations from Job Mixture							
Mix No.			I	II	III	IV	V
Passing Sieve	Retained on Sieve		Percent by Weight	Percent by Weight	Percent by Weight	Percent by Weight	Percent by Weight
2″	1″		±5	...	...	...	...
1¼″	¾″		...	±5	...	...	...
1″	½″		±5	...	±5	...	...
¾″	⅜″		...	±5	...	±5	...
½″	⅜″		...	...	...	...	±5
½″	No. 4		±5	...	±5	...	...
⅜″	No. 4		...	±3	....	±5	±5
No. 4	No. 10		±3	±3	±3	±3	±3
No. 10	No. 00		±2	±2	±2	±2	±2
No. 200	.....		±1.0	±1.0	±1.0	±1.0	±1.0
Bitumen	.....		±0.3	±0.3	±0.3	±0.3	±0.3

Mineral Aggregate Combination

There are three different types of asphalt surfaces used on city streets, and, as each one has a distinctive surface texture, a preferred appearance may be secured. These types are sheet asphalt, stone-filled sheet asphalt, and asphaltic concrete. Sheet asphalt surface course is composed of nothing larger than sand particles and naturally has a tightly closed, fine, smooth surface. Stone-filled sheet asphalt surface course is about three parts sand to one part stone that is smaller than 1/2 inch in size and produces a surface texture slightly coarser than sheet asphalt. Asphaltic concrete surface courses range from mixtures of 50% sand and 50% stone to mixtures of 30% sand and 70% stone. The maximum-size stone may range from 1 inch to 1/2 inch, and the surface texture may range from a tightly closed stone-in-mortar appearance to an open, stony appearance. It is only the asphaltic concrete type which gives a wide choice of surface textures.

Assuming that asphaltic concrete 2½ inches thick is the type selected for paving and that The Asphalt Institute Specification A-2-a for Hot-Mix Dense-Graded Asphaltic Concrete is used, the mix that often is recommended for this thickness is No. III. (See Table I). The gradation limits for the mineral aggregate and the proportion limits for the coarse and fine aggregate, filler,

and asphalt cement are all given. These limits have been arrived at by past experience with a wide variety of aggregates, which differed considerably from each other in their paving characteristics but were used successfully when put into combinations within the limits as specified. These are limits, therefore, of all the possible sizes and all the possible combinations from which a specific asphalt mixture may be selected. A specific mixture necessarily must have its own limitations to identify it from all other possible mixtures. If this were not so, a pavement would consist of a variety of mixtures and not produce the characteristics for which it was designed.

This difference has not been commonly understood and has led to the mistake of comparing the analysis of a pavement with the general requirements for the composition of mixtures. In considering this more fully, No. III mix is used for illustration. If one analysis shows 55% stone (coarse aggregate) to 45% of sand and dust (fine aggregate and filler), with 5% of asphalt cement, and another analysis shows 70% stone to 30% of sand and dust, with 7% of asphalt cement, both analyses will be found within the specified limits. One of these mixtures has very little sand, and the other has 50% more sand, and, if the first mix has the proper amount of asphalt or is too dry or too rich, then it must follow that the second mix is sloppy or somewhere near right or just swimming in asphalt. They cannot all be right. Remember that we are dealing with the same aggregate in each case,

TABLE II
SHEET ASPHALT

Passing	Retained on	Percent
No. 10 sieve	No. 40 sieve	10-40
No. 40 sieve	No. 80 sieve	20-45
No. 80 sieve	No. 200 sieve	12-32
No. 200 sieve	.....	10-20
Bitumen.....		9.5-12
Voids in Compacted Mix....		5

Permissible Variations from Job Mixture

Retained on No. 200 sieve—
2.0 percent above or below
Passing No. 200 sieve—
1.5 percent above or below
Bitumen —0.5 percent above or below

and its ability to hold asphalt in a uniform film thickness is a constant.

What is shown here may be considered an exaggeration by some, and it might be that these extremes will be so noticeable in the street work that corrections will be made. However, if it were sheet asphalt (see Table II), or stone-filled sheet asphalt (see Table III), and the variations were as wide in the bitumen content and amount of 200 mesh as are permitted in the composition of mixture, it is improbable that this would be even noticed in the street work. But it is certain that the mixture would be either so dry and hard that it would crack, or it would be so soft as to readily displace under traffic, or at least extrude enough asphalt to produce a slippery surface.

It is plainly seen that the composition of mixture (as usually set forth in all general specifications) is for general use only, and that the specific mixture selected must be defined within much narrower limits. Therefore, the daily analysis of the mixture actually being produced at the paving plant should not be compared to the general specification, but rather to its own specification, which is the job-mix formula.

Job-Mix Formula

In order to determine the asphalt mixture that will best satisfy the conditions to which the pavement will be subjected, it is necessary to determine the job-mix formula, which is done by laboratory studies of the materials and various mixtures of them until the proper combination of aggregates and asphalt cement is arrived at. There is nothing new or complicated about the determination of a job-mix formula. It is carried on as a matter of routine procedure in the design of portland cement concrete, and the same principles apply whether bituminous cement or hydraulic cement is used. This laboratory work is necessary for the design of a good-quality pavement and must not be by-passed. A trained asphalt chemist should be responsible for the design, as it is well known that sands apparently alike and of the same mesh composition often may carry much different amounts of asphalt cement and that both sands and rocks have individual characteristics.

TABLE III
STONE-FILLED SHEET ASPHALT

Passing	Retained on	Percent
½" sieve	No. 10 sieve	20-35
No. 10 sieve	No. 40 sieve	7-30
No. 40 sieve	No. 80 sieve	11-40
No. 80 sieve	No. 200 sieve	10-30
No. 200 sieve	.....	7-12
Bitumen.....		7-9.5
Voids in compacted mix.....		5

Permissible Variations from Job Mixture

Retained on No. 200 sieve—
2.0 percent above or below
Passing No. 200 sieve—
1.5 percent above or below
Bitumen —0.5 percent above or below

The first step toward selecting the job-mix formula is to test all the materials in accordance with the standards of the American Society for Testing Materials and to make any other quality tests which conditions may indicate. Then the first trial mixture is made by taking the mid-points of the proportion limits of our example-mix No. III in Table I. Trial mixtures are repeated until a satisfactory stability is obtained. There are several methods of determining stability now in use. The Asphalt Institute employs two of them—the Hubbard-Field and the Triaxial Shear Method. When the Hubbard-Field method is used, the recommended stability at 140°F. for surface course, No. III mix, is 3,500 to 6,000 pounds for the worst traffic conditions and 2,500 to 6,000 pounds for lighter traffic conditions. The proper amount of asphalt, the workability of the mix, and the percentage of voids in the pavement are guiding factors in the stability result and are just that many more facts that are needed in arriving at the job-mix formula.

Finding the percentage of voids in the compressed mixture in the laboratory gives advance knowledge of what the density should be in the finished pavement, and from this it can be determined during construction if the pavement is being sufficiently compressed. The density of the pavement determines the amount of porosity, which indicates the amount of water the pavement will absorb. A typical job-mix formula resulting from such laboratory study is shown in Table IV and gives exact percentage by weight of all the ingredients.

Paving-Plant Formula

It might appear that all of the necessary information has been assembled in the job-mix formula and that the asphalt plant could begin manufacturing. This is not possible immediately, because mineral aggregates naturally segregate, and the combinations and sizes at the plant may be entirely dif-

TABLE IV
TYPICAL JOB MIX FORMULA
With Permissible Variations
(Range for each fraction)

Sieve Size		Percent by Weight	Range
Passing	Retained on		
Sieve	Sieve		
1"	½"	29 2	27 7-30 7
½"	No. 4	22 2	21 1-23 3
No. 4	No. 10	8 0	7 7- 8 2
No. 10	No. 40	6 2	
No. 40	No. 80	15 6	28 4-29 6
No. 80	No. 200	7 2	
No. 200	.....	5 6	5 5- 5 7
Asphalt Cement...		6 0	5 98-6 02
Total.....		100 0	

ferent from the average gradation on which the job mix formula was based. Therefore the aggregates must be screened. In this screening the fines go into one bin, stones of an intermediate size in a second bin, and stone of the maximum allowable size in the third bin, while all larger sizes go to the reject pile. The mesh composition of each bin is then determined, and the proportion of each bin which will produce the proportions of the job-mix formula is put into percentages by weight and becomes the asphalt-plant formula. Now, this formula is the one on which the plant operates and is the formula on which the quality of the mix depends and is, of course, the formula which must be kept within close limits in order to assure a product of uniform quality. Part of Table IV shows The Asphalt Institute's permissible variations from this formula, and these variations emphasize how closely the formula must be carried out.

Inspection

With the paving-plant formula in operation, the work starts. Immediately the numerous factors that could change the quality of the mix have to be evaluated. For this reason, competent inspectors are necessary. The qualities of the new raw materials change from time to time. Sand may vary from coarse to fine, and stone, which is most often a combination of several bin sizes at the quarry, may not be uniform. Stone screenings are often a key material in the mixture, and marked variations have to be determined. The carry-over in the bins is calculated when the asphalt plant formula is made, and, if for any reason more or less material is on the screens, then there is a variation in the carry-over and a change in the composition of each bin. It is important, therefore, that a steady flow of material go through the plant to keep the carry-over uniform.

Plant wear and tear may loosen screens, develop holes in the bin partitions or in the screens, and completely upset size proportions. Aggregates may be deficient in a particular size required by the job-mix formula, and the addition of a small amount of screenings may be necessary. Often the proportioning is done by a 1-yard bucket feeding directly to a big hopper. Even if the bucket operator had nothing else to do, a correct count of buckets with approximately the same load in each is difficult. The layout of most mixing platforms is such that visual inspection of the mineral aggregates is impracticable. From the foregoing it is apparent that frequent sampling is the only way to detect unusual changes so that proper corrective measures can be taken.

Weighing is done on dial scales or beam scales, and the accuracy of the weights and of the operator should both be verified frequently. The mixer should be in such condition that a mixture could be properly coated and discharged in from forty-five to sixty seconds, including an initial fifteen-second dry-mix period. When a longer time is taken, damage may be done to the asphalt cement by overexposing it to mixture with air, and, while it is not noticeable at the time, this hardening caused by the oxidation may result in a loss of penetration. An investigation of the penetration of asphalt cements extracted from pavements that had cracked badly showed that a loss in penetration was the chief cause of this trouble.

Mixing temperature should be the lowest temperature at which the mixture can be properly spread on the street so that the required density may be obtained in the pavement. A temperature of about 300°F., held within a range of 275° to 325°, is very good practice. High temperatures shorten the life of the pavement, and irregular temperatures are apt to produce an irregular appearance in the pavement.

Mineral aggregate temperatures are recorded as they leave the drier and are registered on a pyrometer placed where the burner and feeder men can see it. The temperature on the pyrometer sometimes is 100° higher than the temperature of the mixture, and the inspector must know what the differential is and how to interpret it.

Asphalt cement is generally heated by steamcoils in a tank, and the temperature is uniform. Some older plants, however, heat the asphalt cement by direct fire. Agitation is necessary for uniformity, and careful control of the heat is essential. In order that asphalt will not stick in the trucks, the bodies are sprayed with a mixture of oil and water. Care should be taken to hold this to a minimum in order not to affect the characteristic of the mix on the street.

In preparation for street work, it is essential that all gutters, manholes, and joints of connecting pavements be painted with asphalt cement or asphalt emulsion to insure a tight bond with the new pavement and to waterproof every possible entry of surface moisture into the pavement. It is also good practice to paint a stripe 6 inches wide on top of the new surface, parallel with and adjacent to the curbing.

The density of the pavement when finally rolled should be sufficient to resist displacement under traffic. This should be controlled by making density tests on samples taken from the street, and in no case should the pavement on the street be less than 95% of the original design density.

Limestone dust or portland cement, as the final finish on an asphalt pavement, have been proven to have no practical value.

Conclusion

This short article is not intended to cover all the details governing the design and placement of asphalt mixtures. It is intended, however, to draw attention to several items that frequently are misunderstood.

1. The gradation tables shown under "Composition of Mixture" in most specifications are only a starting point for the selection of a mixture for paving.
2. The job-mix formula and the paving-plant formula should be selected only after a thorough laboratory investigation.
3. The making of asphalt mixtures is a straight manufacturing process, in which correctness of design and kind of supervision are reflected in the product.
4. Inspection is essential to carry out the design.

It is apparent that the construction of a good asphalt pavement is a specialized business, and a city engineer should not be expected to do this work himself. Many cities have their own laboratory and plant men. No city can expect to build good asphalt pavements unless they provide themselves with competent laboratory assistance.

Minnesota to Channel Federal Aid Through State Agencies

MINNESOTA recently passed an act requiring all federal grants for the construction of airports to be channelled through its state aviation agency. This act was endorsed by the League of Minnesota Municipalities, which emphasized the necessity of state participation in order to have a coordinated system of airports, financed by substantial state aids as well as by local and federal funds.

Will Caster-Wheeled Planes Cut Airport Size?

INDICATIONS are that in some cases caster-wheeled planes may cut airport acreage requirements as much as 80%.

Three airplanes with caster-wheel landing gear are being tested by Lloyd Child, assistant administrator for personal flying, CAA, and by John H. Geisse, consultant. The investigators plan to test the planes by landing them in high cross winds both on concrete and on grass fields.

Community Memorial Building to Fill Many Local Needs

Here is the artist's conception of Lenoir City's community memorial building.

By HAROLD V. MILLER, *Director*
East Tennessee Office
Tennessee State Planning Commission

Public and private financing will provide Lenoir City with a combined city hall, public library, municipal auditorium, and police, fire, and power department headquarters.

IN COMMON with most American communities, Lenoir City, Tenn., saw a growing sentiment in favor of an appropriate memorial to those who served in World War II. There were many community facilities needed, so there was little inclination at any time to erect an ordinary monument; rather, individuals and groups offered suggestions for the establishment of a useful memorial. The interests of the various groups have been coordinated to the extent that the project has community-wide backing, the site has been acquired, and the memorial, a building for wide community use, has been designed.

The city is requesting authorization from the state legislature for the issuance of the limited amount of direct obligation bonds required to finance the structure, and it is expected that contracts will be awarded in the near future.

Multi-Purpose Function

The building will consist of two three-story wings joined by a memorial hall, which will front on an important street corner and will serve as a public lobby. Offices of the city and power department, as well as the municipal auditorium and American Legion rooms, can be reached from this lobby. Convenient entrances from the street will be provided for the public library and for the fire and police departments. A yard at the rear will serve the power department trucks and service equipment, the bookmobile, and the police cars. Entrances to the police department's detention rooms will be from this yard. The over-all dimensions of the building are approximately 140 feet on a side, and the cost will be in the neighborhood of $200,000.

A review of the steps taken in unifying public support and in arranging the financing of the memorial may suggest steps which might be helpful to other communities.

As early as 1943, the local post of the American Legion, the principal local veterans' organization, was considering its need for a better headquarters and meeting place than had been available previously. Such limited amounts of money as were available in the post treasury for such purposes were set aside for eventual construction or acquisition of permanent headquarters.

Meanwhile, the town had experienced a war-induced increase in population of from 4,373 in 1940 to about 6,000 in 1946. The increase caused overcrowding in the schools and rendered the antiquated gymnasium unsatisfactory.

The city's municipal business was growing, and additional office space was needed. New demands were placed on specific municipal services, and the need for a better fire department and a larger, better-constructed jail became more apparent. Public needs led to a popular demand for a better-equipped and readily accessible library.

Lenoir City, like most other municipalities in the Tennessee Valley, purchases electric power from TVA and distributes it via a municipal system to consumers in and near the community. The local distribution system has doubled its number of customers in the past several years and anticipates further increases in business. The rented office space was inadequate, and it was recognized that through the construction of well-designed quarters services could be bettered with greater economy.

Planning Commission Takes Leadership

The planning commission, being apprised of the desires or intentions of these various groups within the city to acquire or construct facilities to meet their respective needs, realized that this construction could follow either of two courses. The various bodies could acquire miscellaneous lots scattered about

the city and each could construct some sort of facility according to its needs and finances. On the other hand, if arrangements could be made that were satisfactory to those concerned, under which is a multi-purpose structure could be built to satisfy the various requirements, the memorial would be more impressive, would serve a greater number of people, would meet various needs more adequately or more economically than in separate projects, and would be less likely to be a "white elephant" on the hands of the city or any group.

Community Groups Meet

To this end, the various interested community groups were invited by the city planning commission to meet and discuss their respective needs for facilities. In these discussions it was pointed out that a gymnasium, particularly one large enough for a regulation basketball court and seating for a thousand spectators, would be used mostly by high school groups, and that such a gymnasium should properly be part of the school plant where it could be used for classes as well as contests. (Subsequently, authorization was secured from the state legislature for the issuance of bonds for a new high school with a gymnasium.)

It was possible to design a building based on the stated needs and which also met with the approval of the various groups.

Having agreed to the principle and general design of a multiple-use memorial building, financial arrangements were undertaken.

The American Legion headed the solicitation of gifts. For publicity purposes and as an aid in soliciting public subscriptions, the rendering of the original building design was widely published. It was photographed in color on movie film for use in local theaters, with a message describing the project and soliciting funds. Bond-type certificates in denominations from $25 to $1,000 no doubt encouraged some donors to bring their contributions up to the next round figure. The successful solicitation, plus a "memorial" appropriation from the County Court, totaled some $35,000. With part of these funds, a site was acquired; the balance will be sufficient to pay for that portion of the building primarily for veterans' use. Title to the land rests with the city, which in return agreed that Legion headquarters will be provided in the building.

Of the remainder of the building, a greater part of the space will be occupied by the utility operations, a lesser amount of space being required for the general city functions—city offices and fire and police departments. Accordingly, an arrangement was worked out so that a major portion of the cost will be liquidated by moneys from utility operations. An agreement was made under which the power operations will rent the space from the city at a specified rental for twenty-one years. This assured income put the city in a position to issue revenue bonds to mature in twenty years, the principal and interest to be paid from the rents. Since the building, as city property, will not be subject to taxation as would quarters rented in a non-public structure, the rental payment will secure more bonds and provide more building space than the same monthly payment would secure in the ordinary rental market. Thus there remains only a small part of the total cost to be met by the city.

It is anticipated that building operation and maintenance will be handled by the power department, with costs to be prorated on some mutually agreeable basis.

In a few months, Lenoir City's multi-purpose memorial building will be completed for the use of every citizen. A memorial to local service personnel, it will be no less a monument to far-sighted leadership, a cooperative spirit among community groups, and good planning. Other towns might well follow Lenoir City's example in planning their memorial and in meeting local needs.

* A preliminary sketch of this design was pictured in *Commemoration Through Community Services*, the brochure on living war memorials, published by THE AMERICAN CITY.

Model Trailer Park Policy

THE rapid growth of trailer parks in Southern California has made it necessary for city and county planning commissions to set up standards to prevent them from becoming an eyesore to the community. In December 1946 the Orange County Planning Commission adopted a policy towards trailer parks that is expected to serve as a model for all other counties of the district.

There are now nine rules which all trailer-park operators must follow. Under these rules, each park must contain at least 1,000 square feet of space and present a plan showing the exact location of each trailer and car. Each lot should provide some method of screening so that it is an entity separate from the rest of the park, and the entire property must be screened from adjoining property. The trailer park road must be at least 20 feet wide and hard-surfaced, with trailer coaches not less than 10 feet away from the roadway.

In addition, one shade tree, protected by a neat guard, must be provided for each lot. The location of the tree must be shown in the map at the time the plans and specifications are presented to the planning commission for approval. Also located on the map must be laundry yards, play areas, and other facilities, together with a description of the type of screening for such areas.

The Orange County Commission, since adopting the foregoing rules, has approved the erection of a $250,000, fourteen-acre park, which meets all specifications. It is expected that the new rules will greatly improve trailer parks and tend to make them beautiful, pleasant places in which to live.

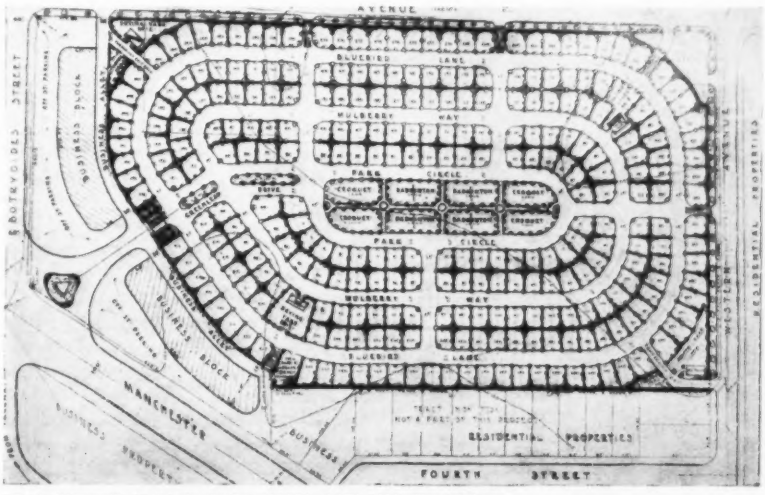


PHOTO COURTESY OF HARRY EVANS TERRELL, LAND PLANNING ADVISOR

Map showing arrangement of trailer-coach spaces, laundry yards, play areas, etc.

Insecticides For Mosquito Control

A fogging machine applying an insecticide to a park area for the purpose of controlling mosquitoes.

By JOHN M. HENDERSON
Professor of Sanitary Science
Columbia University

THE areas of opinion in which professional mosquito control workers are most apt to be found in agreement are those dealing with the principles of selection, rather than with brands of material, makes of equipment, etc. Likewise, these principles have a more lasting significance. For these reasons this article is in the nature of a practical treatise based on job experience, rather than a survey of commercial products.

Choice of Larvicide

The choice of larvicide is affected very much by the type of mosquitos to be controlled. Virtually all of the nuisance mosquitoes are "bottom-feeders." The anophelines are "top-feeders.". Almost all species of mosquito can be killed by contact poisons in the form of a film on the surface of the water, since the larvae and pupae must come to the surface for air during periods of active growth. Only anopheline larvae are killed effectively by stomach poisons in the form of dust particles which float on the surface of the water.

In most mosquito control projects involving the application of larvicides, the bulk of the material is dispensed not in ditches, catch-basins, etc., but in marshes, pools, swamps, and stream edges scattered over the terrain where such factors as length of throw (radius of application), weight of material carried or hauled, travel and walking time, etc., have a primary bearing on operating costs and adequacy of performance. These considerations are at least as important as killing effectiveness in selecting the proper larvicidal materials and equipment.

The term larvicide is applied to those materials which are toxic to the larval stage of the mosquito. In any area-wide control program which includes urban or suburban populations, there is always some need for larviciding. Depending on the circumstances, it may be employed against 1% to 90% of the breeding surfaces. That is, a combination of anti-larval measures is to be preferred. It is only in the rural program that other methods (against the adult mosquito), may completely eliminate or supplant anti-larval measures.

There are three common larvicides. These are paris green, petroleum oil, and DDT.

Paris Green

Paris green is a stomach poison that floats temporarily on the surface of the water. As explained previously, only the anophelines can be controlled effectively by it under the usual application procedures. This is the primary objection made against paris green by the exponents of other larvicides; the limitations which follow in this article being secondary and applying to its use against the anophelines.

Paris green usually is applied as a finely ground powder, diluted two to twenty-fold with powdered hydrated lime or calcium carbonate in various forms. Usual application rates are from one-half to two pounds of paris green per acre of breeding surface.

An objection to the use of this larvicide is the slightly greater frequency of application required. (Paris green kills only the larva, not the egg or pupa, whereas oil kills larvae and pupae effectively and eggs to a limited extent. Moreover, paris green, even when properly applied, is partially ineffective against the very young larva). A lower percentage of kill of the larger larvae with paris green than where oil is applied has also been claimed. Largely, this reflects improper application technics due to inadequate or mediocre supervision. Generally, it is far more than counter-balanced by the fact that, in the larger breeding places, paris green can reach breeding surfaces that oil cannot. (Paris green has a longer radius of application and can penetrate some types of aquatic vegetation that oil does not in normal application procedure).

Paris green cannot be applied when it is breezy or where there are thermal updrafts. The importance of this is minimized by the fact that a man often can treat as much breeding surface in one hour of favorable weather with paris green as in a full working day with oil. Also, other work besides actual larviciding commands a large part of the time of the gang, and time saved by using paris green permits employing the same gang on other duties, such

To make a mosquito control program effective, one should know the limitations and advantages of the various insecticides. This tells what they are, where they should be used, and how to use them economically.

as clearing and brushing, cleaning ditches, and removing equatic vegetation.

The killing effectiveness of paris green applied within one to two hours before rain is markedly lowered, since the rain causes the particles to sink. Since most surface films of oil are almost equally effected, it is preferable to re-dust or resort to drainage rather than change to oil.

Summarizing, and comparing only the two larvicides: oil may be preferred when: (1) cost is not a consideration and manpower resources are abundant; (2) the acreage of breeding surface is negligible; (3) the control of non-anopheline mosquitoes is undertaken; (4) labor turnover is so high as to preclude training laborers and foreman in the slightly more skilled technics of paris green application; or (5) the quality of project supervision is grossly inferior.

When (4) or (5) occur, the prospects are that any larvicide will be applied ineffectively, but the odds favor oil. Paris green is to be preferred in all other situations. Since cost is almost always a vital consideration, it is apparent that paris green almost universally is preferable to oil for anopheline control.

Application of Oil

Petroleum oils may be applied in various forms. Most commonly, diesel or #2 fuel oil is applied directly as a liquid spray at a rate of 10 to 40 gallons per acre (20 gallons average). The oil spreads as a surface film except where prevented by mats of non-vital flotage or aquatic vegetation. The toxicity or spreadability, or both, of petroleum oils may be increased by such admixtures as pyrethrum extract, spreading agents, emulsifiers, and phenol derivatives. In this event, kerosene is sometimes substituted for the fuel oil.

Before the advent of DDT, petroleum oils in one form or another occupied a virtually exclusive field as the larvicide of preference for controlling all the ordinary nuisance mosquitoes except Aedes aegypti.

The feasibility of using DDT as a larvicide in civilian areas of this country was not fully demonstrated until the 1946 mosquito season. It is viewed today by many professional mosquito control workers as the basic larvicide. As with all innovations, however, time must elapse before DDT is adopted as a larvicide for routine use. A field of usage will remain for oil and paris green as supplementary special purposes larvicides.

The outstanding characteristic of DDT as a larvicide is its superior toxicity. As a result, dosage rates can be reduced drastically.

DDT as a larvicide may be used either as a diluted dust, or it may be dissolved in one of several non-aqueous solvents and applied as a spray or as an aerosol fog. Its greatest effectiveness is as a contact larvicide, rather than as a stomach poison, and for this reason application in solution in order to form a thin, evanescent, surface film is the method of preference against all mosquito species, particularly the nuisance types. Opinion differs as to whether it should be used as a coarse spray, fine spray, or aerosol; and also as to the preferred solvent. These choices are influenced by types of equipment and technics of application employed, which in turn reflect the character and size of breeding places in the mosquito control area.

For hand larviciding, the U. S. Public Health Service recommends a dosage rate of .05 pounds per acre of DDT, dissolved in 1 gallon of Diesel oil (#2 fuel oil), containing a small quantity of spreading agent. This is applied as a fine mist spray by a 1- to 4-gallon hand pressure sprayer of the air pump-up type.

Limitations as a Larvicide

Principal limitations result from the extreme toxicity of DDT to many species of cold-blooded vertebrates and of invertebrates besides the mosquito which may be found in or about some breeding places. DDT might exterminate fish and minor aquatic animal life serving as a food supply for higher forms or as important predators of mosquito larvae.

It has been demonstrated that neither extermination nor significant reduction of these populations occurs at DDT dosage rates of .05 pound per acre by ground equipment or .1 pound by airplane. In most types of breeding places, these dosages control anophelines more effectively than other larvicides, but kill nuisance mosquito larvae less effectively. For effective control of the latter, approximately twice as much DDT is needed, a dosage which crosses the threshold of significant harm to fish and some useful aquatic invertebrates. Whether this harm is greater than the effects of certain oil larvicides in some situations has not been determined.

Accordingly, DDT may be used safely, from this standpoint, over a wider range of aquatic situations as an anopheline larvicide than as a nuisance mosquito larvicide.

All types of breeding places may be feasibly treated with DDT for anopheline control by experienced, dependable labor operating under good supervision. Where these circumstances do not prevail, the extent to which breeding places are banned for DDT larviciding should be in direct proportion to their lack. Generally, the exclusions might be minor, and confined first to ornamental fish pools and shallow fish-hatchery ponds. This might be extended to all shallow water areas containing significant numbers of minnows or fingerlings. Depending on the project area, these exclusions may range from 1% to possibly 30% of the breeding surfaces.

Of greatest importance is the fact that most of the breeding places for these species do not contain significant wild-life value in the form of organisms having a special susceptibility to DDT.

DDT, the war-developed insecticide, has become very popular since the war. One way of applying it is with a spray bomb.

This is particularly true of the temporarily watered Aedes breeding places, polluted streams and ditches, and urban and suburban breeding places in general. While larviciding for anopheline control involves a lower dosage rate, larviciding for nuisance mosquito control is less apt to involve surface feeding fish and live fish food. Hence, the percentage of breeding places excluded from DDT treatment would average about the same for nuisance mosquito control districts as for the lower quality of malaria control project.

Other Qualifications

Some other exclusions which apply to both types of projects also deserve mention. There are some indications that, where pasture grass has been exposed to repeated applications, DDT may be excreted in cow's milk in fairly high concentrations. At least until studies under way have been completed, DDT larviciding should not be practiced in wet pastures.

DDT larviciding by airplane should not be practiced over breeding places where food crops are being grown on immediately adjoining land because of the drifting of the larvicide.

DDT is poisonous to humans, as are most other insecticides. When used as a larvicide, it presents practically speaking, an occupational hazard only to mosquito control workers. Safety precautions have been developed by the U. S. Public Health Service which should be carefully observed. The remarkable lack of cases of occupational poisoning in mosquito control operations from DDT, however, permits it now to be classed among the safer insecticides.

Comparative Costs

In comparing the cost of different larvicidal methods on a basis of cost experience, an intimate acquaintance with the conditions under which the project is operated is essential for sound appraisal.

Because of the difficulty of resolving all of these factors, hypothetical costs rather than cost experience are being furnished in this article. These are based on prevailing wage rates, which, depending on location, are from 75% to 400% greater than in the previous decade. The table is, of course, subject to adjustment for individual situations, but is believed to represent average conditions.

The extreme range of cost-per-acre application in the above table is $7.60 ($8.00-$.40). For the project employing oil applied by hand, conversion to hand DDT is indicated for as little as 1 acre of breeding surface (10 to 40 acre-applications per year), where DDT can be completely substituted. Where it is necessary to use two larvicides on a project, adoption of DDT probably would be justified where 5 acres or over can be treated with DDT. Introduction of terrestrial power or airplane application methods appears justified where at least $500 in annual savings can be realized, or where there are breeding places inaccessible to hand application.

Selection of the larvicidal material has been considered so far from the standpoints of damage, hazards, killing effectiveness, and costs. Such selection is also interrelated to methods of application, and costs in turn are related primarily neither to one nor the other per se, but to the two in combination.

COMPARATIVE COSTS AND EFFICIENCIES OF DIFFERENT LARVICIDES AND APPLICATION METHODS

Material	(2) Cost per Acre—Application Hand	Power (1)	Airplane	Approx. Larval Kill
Fuel oil, 20 gal./acre	$8.00	$3.50	Not usable	90%
Pyrethrum oil	5.00	2.50	Not usable	90%
Paris green				
10%, 1 lb./acre	2.50	1.25		80-90% (3)
20%, 2 lb./acre			$1.00	70% (3)
DDT, dust				
2%, 0.1 lb./acre	2.25	1.15		80-90% (3)
5%, 0.2 lbs./acre			.60	70% (3)
DDT, solution—mist spray				
.05-.1 lb./acre	2.00	1.00		95%
DDT, Aerosol				
.1 to .2 lb./acre		1.00	.40-.45	90%

NOTE: These are typical costs, subject to wide variation in relation to suitability of breeding places for method of application employed.
(1) Power equipment mounted in truck or boat.
(2) Anopheline kill only.
(3) Labor and non-labor combined, including gang overhead but not overhead in higher echelons.

New Building Code Standards for Light and Ventilation

By HOWARD VERMILYA

THE American Standard Building Code Requirements for Light and Ventilation, developed by a sectional committee of the American Standards Association under the sponsorship of the National Housing Agency and the U. S. Public Health Service, and recently approved by the American Standards Association, is for communities with no adequate standards. Its requirements for yards, courts, and the spacing of buildings on the same lot or plot in relation to their heights are intended to insure that adequate amounts of light and air will be made available to all buildings. Having thus made light and air available to the building, the requirements go on to relate window area to floor area so as to insure the admission of adequate amounts of such light and air to the interior of rooms.

Windows are required only in habitable rooms, that is, rooms in a dwelling unit that are used for general living purposes.

The standard provides requirements for the lighting and ventilation of public hallways and stairways, and includes provisions for size and arrangement of habitable rooms. These latter provisions are of special importance at this time when, due to the housing shortage, all sorts of accommodations are being offered as homes. The pressure of high construction costs, high land costs, and a fantastic demand has led to an inevitable squeeze on the home seeker, the net effect of which is to reduce what he gets for his money in terms of space. The provisions dealing with arrangement of rooms to insure privacy in respect to bedrooms and bathrooms is somewhat less directly related to light and ventilation than is the matter of room sizes, but it is an important step in the direction of better planned homes. Moreover, it is the type of good housing standard which, unless written into the law, is likely to be disregarded when costs are high and there is a tendency to economize on space. . . .

Excerpts from article in the November 1916 issue of *Industrial Standardization*. The author is director of the Housing Research Division, John B. Pierce Foundation, Raritan, N. J. Mr. Vermilya served as chairman of the American Standards Association sectional committee, which prepared The American Standard Building Code Requirements for Light and Ventilation, A53.1-1946, available from the Association at 70 E. 45 St., New York 17, N. Y., at 45 cents per copy.

A Half-Century With Schenectady's Fire Department

A SOUVENIR history book of the city's forty-seven-year-old fire department has been issued by the Schenectady, N. Y., Permanent Firemen's Association. Liberally illustrated, the book begins with the story of the formation of the paid department in 1900, under the direction of Chief Henry R. Yates, and goes on to describe the progress that has been made since then.

Fire Fighting Equipment

There are now 176 miles of water mains and 2,259 hydrants in operation throughout the city. On every other corner throughout the city, a faint red light marks the presence of one of Schenectady's 272 fire alarm boxes.

The rescue squad carries special equipment for life-saving and for forced entry into buildings. A recent addition is a General Electric generator, which has power outlets on the side of the truck so that extension leads may be plugged in for the operation of tools and appliances. The three 500-watt floodlights are often used in other emergencies besides those of fire-fighting. An electric portable air pump furnishes air through an armor-clad flexible rubber hose to a regulation headgear and face-piece worn by firemen.

The people of Schenectady are fortunate in the department's possession of four aerial ladder trucks which are useful during fires for removing people from factories, hospitals, schools, stores, and hotels. A similar life-saving essential is an Atlas life net.

Training Program

All members of the fire department go through a training school program. The basic purpose of the school is to keep the men physically fit and to train them in the art of doing their work with the least effort. The five-story tower, built to specifications set up by the National Board of Fire Underwriters, is designed for instruction in sprinkler operation, for combating fires under extremely hazardous conditions, and for drills with scaling ladders or other equipment.

The hand-made rope safety net, used at the drill tower, is 15½ by 19½ feet. A strong frame of steel-beam construction has been erected on the side of the tower used for ladder practice. The net is fastened to seventy-five shock absorbers and springs which help to break the force of the fall. It is protected by gymnasium mats on a waterproof tarpaulin lashed to sides of the frame, and the firemen fall on these coverings, which protect them as well as the net.

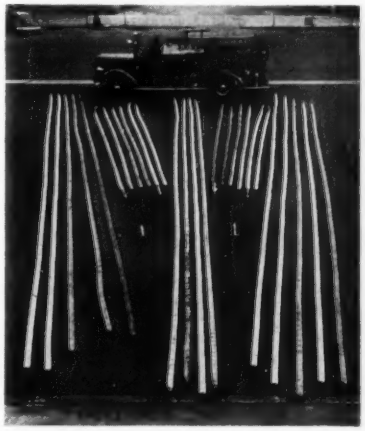
The effect of the stress laid upon fire prevention is reflected by fire losses 45% lower in the decade 1936-45 than in 1926-35. In 1945, Chief J. J. Higgins received a plaque as an award for his department for first place in the National Fire Prevention Campaign conducted by the U. S. Chamber of Commerce.

The fire fighters make a great effort to avoid unnecessary damage during a fire. Buildings are ventilated, and the fire is located before water is applied. The most important single item used in salvage work is the waterproof cover or tarpaulin. A most significant phase of salvage work is the removal of water from buildings. When done promptly and efficiently, much cover work is avoided. One of the most practicable means of draining water is by means of chutes constructed of tarpaulins to drain through windows and doors.

Basement drainage is a difficult problem, and frequently large losses occur because of inadequate drainage facilities. In recent years, siphons have been made especially for this purpose. In view of the price of pumping engines, it is neither economical nor efficient to use them for draining basements.

Salvage efficiency extends to every phase of fire fighting. Buildings equipped with sprinkler systems present excellent opportunities for salvage operations, both in cases of fire and sprinkler leakage.

Schenectady has a low fire loss and a low insurance rate, due to up-to-date equipment, trained men, and good leadership. Chief Higgins and his men endeavor to make the department more than a fire-fighting organization. They regard it as a civic institution interwoven with municipal life.



Above: The 1,000 feet of hose carried by a 1,000-gallon Mack pumping engine. Below: The rescue squad and its equipment. Left to right: An air mask with hose, a regulation diving suit and helmet, an oxygen mask, an all-service mask.

XUM

Industry Offers a Helping Hand

Municipal officials have often overlooked the possibilities of getting aid and assistance from local industries in solving some community problems. As the writer of this article points out, many industries are anxious to win the friendship and understanding of the people in a community and will go out of their way in order to do so.

It is up to municipal and educational officials, however, to take the initiative in securing this cooperation, explaining community difficulties to corporation management, and working for a mutual understanding of the relationship between community and industrial problems.

Mayor Joseph P. Hand (left) receives the deed to the ground for an Amsterdam, N. Y., Memorial Park from Frank Zagola, Bigelow-Sanford employe, while Plant Manager S. L. Duffett looks on.

By MARTIN C. WRIGHT
Vice-President
Public Relations Associates, Inc.

THERE'S been much talk and no little activity lately in industry's community relations. Industries are showing an active interest in the welfare of the communities in which they are located, and are more than anxious to have the community think well of what they are trying to do.*

There has not been the expected response among the community officials, however, in recognizing this trend and working with industrial leaders for the benefit of the people in their municipalities.

How are industries going about winning the friendship and understanding of the people in the community?

Industry is literally throwing its doors wide open to the community by conducting "Open House" or "Family Day" programs. Friends and relatives of the employes are invited to go through the plant to see exactly what the working conditions are, how the products are manufactured, and what the management group is like.

In one small New England plant of 500 employes, two "Family Days" attracted 1,500 persons. The visitors, friends and families of employes, went through the entire plant, stopping at the cafeteria for refreshments about midway on the tour, and saw employes at work turning out the finished product—permanently insulated wire and cable.

The last two stops on the tour were the offices of the vice-president and the president. There the visitors were greeted by the top executives of the company. This worked two ways: The guests learned that the company officials were pretty good fellows, and the company executives found the wives and children of the employes attractive, interesting people.

Two elderly ladies, pretty well tuckered out from their hour-and-a-half trip through the plant, sat down to rest in the president's office. They had never been in a factory before, they said, and were surprised that it was so clean and pleasant.

Inertia of Local Officials

Here was industry throwing its house open for all to see. The Mayor and council of the community and local state representatives were invited to visit the plant at the same time as the company's employes. Not a single local or state government official showed up!

In another community, the executive vice-president of a company became alarmed at the poor educational facilities offered the children of the town. He talked with the chamber of commerce for the purpose of doing something about it. A committee appointed made a real investigation and found the local schools years behind the times because of the civic leaders' penny-pinching attitude toward education. The committee spent some time visiting the schools to observe some of the conditions at first hand. A report was drawn up and published in the local newspapers condemning the lack of planning for the education of the boys and girls of the community. What happened? To date, nothing. The local officials are still sitting back waiting

*The National Industrial Conference Board in its Studies of Business Policy No. 20, *Industry's Community Relations*, points to an increasing need on the part of industry to be understood in the community. Helen A. Winselman, of the Board's Division of Business Practices, writes, "Business and industry want to be understood. They want their employees and their communities to comprehend the methods by which business operates under a free economy, for only through such understanding can they gain the confidence of the people."

L. J. Fletcher, Director of Training and Community Relations at the Caterpillar Tractor Company, says, "There is but one way this job (obtaining confidence of the employee for free enterprise) can be done! There is but one place it can be done! And there is but one group which can do it!

"The job must be done in each community, by the men in the industries and business of that community."

for someone else to do something!

Yet industry in that community is perfectly willing to pay higher taxes to do its part in bettering the educational opportunities for the children of the municipality! The latest reports are that the Chamber is going to try again. It is going to pay as much as $25,000 for an independent survey of the town's educational facilities by competent representatives of a large university.

More and more companies are sponsoring scholarships for students of the local high schools, and many more would be glad to do it if local educational leaders ever thought to call it to their attention. In all of our counseling of industrial firms, we have yet to find one instance of a company-sponsored scholarship, the idea for which originated with the local school authorities.

Here is a field that offers fine opportunities for the community to obtain greater benefits for its children from industry. The management of the company itself may be willing to sponsor scholarships, but failing that, there are many employe organizations and associations in industry which would be glad of the opportunity to do something worthwhile for their children and the children of other citizens of the town. It's time some of the school authorities woke up to the fact that "thar's gold in them thar hills."

Industries are much interested in the Boy Scout movement, and many companies are sponsoring troops. Two companies that I know of have hired full-time scout executives, carry them on the company payroll, and have them work with boys in the communities where the company has plants. One small company, for example, sponsors troop meetings in its offices and goes so far as to promise the boys jobs in the plant when they complete their educations.

Why don't civic authorities interested in reducing juvenile delinquency investigate that? In many instances the toughest kids in town live near industrial plants. Here is an opportunity to get them a meeting place in their own area, leadership from among sound, capable business executives, and an opportunity for them to develop into useful, gainfully employed citizens of the community.

There are many more examples of industry's willingness to do more for the welfare of the communities in which they are located. Many of them are not sure of how to go about winning friends and influencing the people in the community, and many of them are afraid that their purpose may be misunderstood if they undertake these things on their own.

Industry is interested in doing more for the communities for one reason: that is, to help people understand the advantages of our present free-enterprise system as opposed to other forms of government. That is a cause with which none of us can quarrel, and it is a cause which needs all of the crusaders it can get. If the elected municipal officeholders and the educational authorities are interested in helping to make their community a better place in which to live, they can be sure of a ready helping hand from the managements of industries located there.

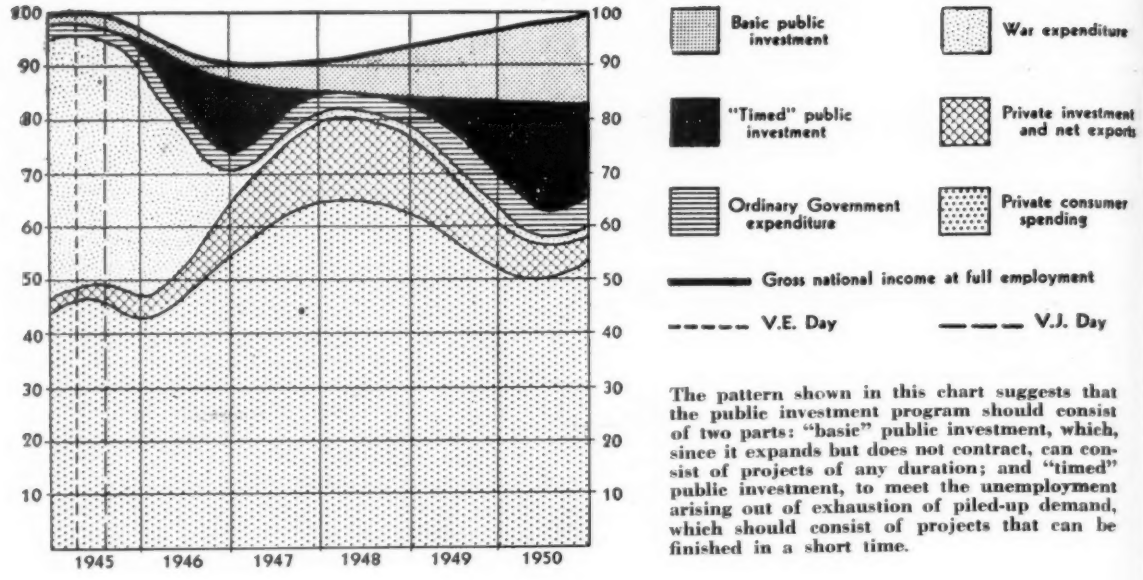
It's up to the local officials to take advantage of industry's willingness to cooperate for better schools, better opportunities for youth, and better living for its citizens.

Country Club Becomes City Hall

The handsome municipal building in Evanston, Ill., was once a country club. Below: The entrance foyer. Right: The city council in session.

IN the spring of 1941, a Citizen's Advisory Committee appointed by Mayor S. G. Ingraham of Evanston, Ill., went to work on the problems of selecting a site for a new city hall and devising a method of payment. By the fall of 1946, the citizens of Evanston viewed the gratifying results.

Land and the clubhouse were bought cheaply by the city from Evanston's Country Club. The city then sold its old municipal building at more than four times the cost of the new site. Since the committee had continued to draw up plans and award contracts in spite of the war, the rising costs of construction in the post-war years did not affect its plans. After remodeling and landscaping, its balance sheet showed a surplus which it intends to use for further municipal improvement.



The pattern shown in this chart suggests that the public investment program should consist of two parts: "basic" public investment, which, since it expands but does not contract, can consist of projects of any duration; and "timed" public investment, to meet the unemployment arising out of exhaustion of piled-up demand, which should consist of projects that can be finished in a short time.

Local Responsibility in Helping to Maintain Full Employment

WE reproduce above a chart from one of the most valuable and comprehensive books yet published on approaches to solving what is perhaps the key problem of a democratic society: the maintenance of full employment and stabilization of the economy in order to avoid major depressions. The book is *Public Investment* and *Full Employment*, published by the International Labor Office.*

Although pointing out that the chart must not be regarded as a forecast of events in any particular country, and that the exact relationship of the major components of gross national income depicted represent only one of many possible variants, the book states that the general contours probably will be as shown. The national importance of having a continuing series of public works projects planned and ready for construction should be obvious.

Spelling out in specific terms the factors involved in timing public investment so that it will be of the most value in offsetting fluctuations in private employment, the book shows the decided relationship between local public-works or public-investment planning and international security and prosperity. The term *public investment* is used to include the concept of planning for public services as well as for actual physical projects and undertakings.

National and Local Responsibility

The responsibility of the United States in avoiding violent fluctuations in its own economy which, in turn, have grave international repercussions, is clearly stated. *But the stress laid on local community obligations in the total picture is of the greatest significance.* A section is devoted to technical problems in timing public investment which includes chapters on the necessity of meeting and overcoming such local, legal, and administrative problems as the advance appropriation of funds, letting of contracts, and acquisition of sites; problems of community planning, such as steps in preparing a master plan and assigning priorities to projects; and the engineering aspects of timing, including studies on individual types of projects and how to apply criteria for determining their relative importance.

Two other sections describe the public works program experience in various countries during the thirties, and outline the task ahead in this country and others so that governmental policies and programs can be more effective in immediately halting unemployment trends and making the economic systems work.

The book inspires confidence. Enough administrative experience in public investment has been gained so that it is now possible to see that governmental programs can assist, are vital to, and, indeed, are a part of private economic workings, without destroying individual initiative or liberty. The technical ability exists to make full use of our resources and distribute more widely the benefits of accelerating technological progress. The chief problem is that of getting people together to set up planning machinery and to prepare plans for the future. But, as the book indicates, planning is no longer optional if democratic traditions are to survive.

**Public Investment and Full Employment*—The International Labour Office, 3450 Drummond Street, Montreal, 25, Canada. Distributed in the United States by the I.L.O., Washington Branch, 734 Jackson Place, Washington, 6, D.C. 1946. 348 pp. $2.25.

Studytour on European Reconstruction and Community Planning

Readers of *The American City* who may wish to consider joining a study tour to England, Czechoslovakia, Poland, and probably Russia, now being planned for six to seven weeks during August and September, can secure information from World Studytours, 417 W. 121 Street, New York, N. Y. Planner and leader of the tour will be Hermann H. Field, A.I.A., who has intimate knowledge of the countries to be visited.

The WHO and WHEN of a Municipal Retirement System

By A. G. GABRIEL
Consulting Actuary
Detroit, Mich.

This article by Mr. Gabriel, a consulting actuary, discusses the fundamental principles on which many municipal retirement systems are being based.

Its basic approach should be of special interest to municipalities which are looking for a clearly stated, common-sense guide to retirement system problems.

WHEN planning a retirement system for the officers and employes of a municipality, several problems of major importance arise. In this article two questions will be discussed; namely, who shall be included in the membership of the retirement system, and when retirement shall become effective.

Membership

Let us begin with the general statement that the membership of a retirement system should include all officers and employes of a municipality. That brings forth at least the following four specific questions:

1. Should officers and employes have the right to accept or decline membership?
2. Should part-time, seasonal, and casual employes be included?
3. Should policemen and firemen be covered in the general plan?
4. What should be the retirement status of elective officials?

1

The right to accept or decline membership, as a general proposition, should not be given officers and employes. If employes are permitted to decline memberships it may happen that (a) an employe who has the greatest need for retirement income protection will be the individual who declines membership in order to avoid having contributions deducted from his pay; or (b) an employe may decline membership in order to remain on the payrolls at full pay after he passes the age of compulsory retirement, since compulsory retirement is generally applicable only to members, or (c) a younger employe may decline membership because to him the age of sixty appears to be so far away that he is sure he will not live to reach it.

2

A distinction is made between part-time, seasonal, and casual employes. Part-time employes may be employed twelve months a year, but for only part of a day; for example, school lunchroom employes. Seasonal employes may be employed full-time for only a part of a year, such as park maintenance employes. Casual employes may be employed for a temporary job, upon the completion of which their services are terminated; for example, individuals engaged to assist at elections and for snow removal. It is difficult to separate these groups by definition. Consequently, for practical purposes, many plans provide that any employe who earns less than a fixed amount per year (for instance, $500) is excluded from membership. All other officers and employes are included.

3

If a municipality's policemen and firemen are not covered by an existing retirement plan, then it is advisable to include them in the membership of the municipality's general plan. The advantages to be gained in the administration of a plan covering all the eligible officers and employes of a municipality are obvious. Also, a unified retirement system permits the treatment of all the municipality's officers and employes on a more uniform basis than if separate systems are established for different groups of officers and employes. Even though a municipality's policemen and firemen are covered by an existing separate retirement plan, it may still be advisable to include them in a unified plan covering all the municipality's officers and employes. If, however, a separate plan has long been in operation and has become integrated in the employment policy of the department, it may be better to continue it separately, with modifications, if necessary, to make its provisions financially workable.

4

Any proposal to include elective officials in the membership of a retirement system raises arguments for and against the proposition. Some of the arguments against the inclusion of elective officials appear to stem from political expediency rather than logic. Many elective officials devote their full time and energies to the business of managing governmental agencies. The only distinction between them and a department head is that the elective official is required to obtain the people's approval of his work every two, three, or four years. There are instances where part-time elective officials are part-time in name only. The municipality's growth, with the resulting increased services demanded by the citizens, virtually requires the full-time attention of the "part-time" elective officials. When the people, by direct action in the voting booths, approve the services performed by an elective official, full-time or part-time, for a sufficient number of years to entitle him to retirement benefits upon his separation from municipal service, then it seems to me that he is entitled to the benefits, if he has attained retirement age.

Retirement Age

Retirement because of age and service may be classified as follows:

1. Voluntary retirement upon the initiative of the member officer or employe.
2. Normal retirement upon the initiative of the municipality.
3. Compulsory retirement.

1

Voluntary retirement of an officer or employe, upon his own initiative, may take place after he has reached sixty years of age. For a policeman or fireman, retirement may take place after he has attained fifty-five years. Permitting policemen and firemen to retire five years earlier than other officers and employes of the municipality can be justified by the nature of their work. A police or fire department overloaded with older men can be more costly to the municipality than a department manned by younger men. As a man grows older, he is inclined to become more cautious in subjecting himself to situations involving possible physical risk, and his physical coordination becomes slower. In the case of a policeman or fireman, his ability to perform the line duties of his rank with average efficiency may become impaired after he has passed fifty-five.

2

Normal retirement of an officer or employe, upon the initiative of the municipality, may take place upon his attainment of the age of sixty-five. For

policemen and firemen, the normal retirement age is usually fixed at sixty, if the voluntary retirement age if fifty-five. Elective officials are generally excluded in the application of the normal retirement provision.

3

In many cases an officer or employe aged sixty-five and over, except a policeman or fireman, is able and capable of continuing in the performance of the duties of his position. In fact, because of his wide range of experience and knowledge of the work he is doing, his continued service can be of great value to the municipality. To take care of such cases, a retirement plan may provide that at the option of the officer or employe, subject to the approval of his department head, he may be continued in municipal service for periods of time not to extend beyond his attainment of the age of seventy, or five years after the beginning date of the retirement plan, whichever is the later. It is recommended that extensions of service beyond sixty-five years (or sixty for policemen and firemen) be limited to periods no longer than a year at a time, and that the granting of any extension be based upon the condition that the officer or employe is in reasonably good health as evidenced by medical examination. Whenever an extension expires, it can be renewed from time to time, so long as the age of seventy is not passed. For the purpose of giving older persons ample time to get their financial houses in order before retiring from municipal service, it is customary to allow officers and employes to continue in service beyond the age of seventy during the first five years the retirement system is in operation.

"Our Fair City"— Is the Indictment Fair?

By LUTHER GULICK, *President Institute of Public Administration New York, N. Y.*

THE Washington correspondent and Merry-Go-Round columnist, Robert S. Allen, has brought together seventeen unequally brilliant journalistic efforts, in the Lincoln Steffens manner, each by a separate newspaper man about his city.* The book should be read by all American city dwellers, not solely because we are preaching free elections and democracy to the world, but also because so many of our problems today and tomorrow are city problems.

The Indictment

It is Allen's thesis, summarizing the seventeen stories, that each American city has its own special personality and its own sordid and noisesome pattern of political power. All America, he alleges, is a "reeking shambles of corruption, incompetence, waste, and misrule," and, what is worse, ". . .we have made no fundamental progress in municipal government in the past fifty years" (p. 3). He agrees with Steffens that the cause for this condition is the "American businessman" and the lazy and selfish citizen, not the boss or spoilsman, who merely rushes into the civic vacuum (p 5).

A number of other contributory causes emerge in the essays, such as absentee overlordship in Birmingham, Denver, Seattle, and Butte; obsolete boundaries which strangle political life in Boston, St. Louis, Philadelphia, Milwaukee; the universal dominance of city problems by rural-minded legislatures, particularly as the cities reach for more adequate revenues in the face of inflation; the universal obsolescence of transportation systems, most of which have now been abandoned to city ownership, and the unsavory rule of some newspapers in municipal affairs, as in Chicago and Kansas City. Unfortunately the book has no index, so that it is very difficult to follow these exciting problems from city to city.

What is the way out? None is suggested; in fact Allen tells us that "good municipal management when it occurs in the United States is wholly an accident of fate, a lucky break owing to fortuitous circumstances; the fortunate presence of an able and courageous leader, public outrage and surfeit with scandal and abuses, or a fractional brawl within a dominant political organization" (p. 15). But he leaves Cincinnati and Rochester out of the book, and focuses his story primarily on politics and morals, omitting administration.

This is bad reporting, because it is partial reporting. The reason for this lop-sided story is that American newspaper men are ignorant on the technical side. They don't know how to examine, appraise, or measure municipal services. Not knowing these technical facts or comparative service costs, the newspaper reporters naturally fill up their pages with brothels and symphony orchestras, slums and city plans — though there is fine awareness of economic foundations, as in Seattle's story.

Main Point Has Been Missed

Most of what the reporters say is true, though there are a few howlers. But the newspaper men have missed the main point. American citizens keep and finance their city governments because they render a series of services without which men cannot live in congested quarters. But Americans are busy with work, their families, and their sport and leisure. Therefore, they hire politicians and others to keep the government running for them. When these agents do a rotten job, take too much for themselves in passing, or get "exposed," the American citizens step in and clean house, turning back again to their individual preoccupations. Under this system: (1) service levels have advanced immeasurably in fifty years; (2) many housecleanings have been carried through; (3) standards of regularity of administration, if not of honesty, have been advanced spectacularly; (4) many municipal services like health, engineering, and fire protection have been professionalized, and (5) no machine has held itself in power in the face of substantial public discontent.

However much we may weep over our lazy citizens and their lax morals, these are colossal democratic and administrative achievements for those who will look broadly at history's course.

The truth is, a city serves mankind in several ways: it provides the economy which permits him high specialization and freedom in work; it is the community which gives him and his family social existence and status; it is the culture which gives him the satisfactions of recreation, entertainment and art; it is the co-op which administers for him many essential services; it is the government which gives him protection and freedom; it is the political organism which gives him political life and sublimation, and, in a democracy, an approach to the control of his own daily affairs and some influence on his destiny. Those who would study cities must examine all these facets, and they must examine these facets not superficially, with adjectives and adverbs, but fundamentally, with technical appraisals and measurements.

* *Our Fair City*, edited by Robert S. Allen. The Vanguard Press, 424 Madison Ave., New York 17, N. Y. 1947. $3.50.

New Alloy for Water, Sewer Construction

NOW that the country is getting back on a peacetime basis, thousands of communities are preparing to modernize their water works and sewage processing facilities and to construct new plants. Engineers, superintendents, municipal officials, and manufacturers are becoming increasingly aware that the longest service and lowest maintenance expense result from selection of the most suitable materials for parts which must withstand corrosion and wear.

Just because a certain material has always been used for a given application does not mean that such procedure should be continued. Perhaps there is a better material available. For example, where rustable assembly bolts are used for water meters, maintenance expense climbs. When meters are taken apart for periodic cleaning, much time is wasted fighting rust-frozen bolts which may even have to be sawed and drilled out before the meter can be used again.

Used for Bolts

Sometime ago a manufacturer began making water meter bolts from a high-strength, copper-base, engineering alloy called Duronze V (silicon bronze). Nuts were made from Duronze III, a free-machining aluminum bronze alloyed with silicon. He found that such bolts and nuts did not "seize" and could be used again and again because they neither rusted nor deteriorated with time. Tensile strength of the Duronze bolts is approximately 100,000 pounds per square inch, which is considerably higher than that of ordinary steel bolts.

One water company used bolts made from so-called "bronze" for large copper screens designed to prevent foreign matter from entering the water main. In less than two years, the screens began to fall off the frames because many of the bolts had fractured due to "season cracking". The "bronze" proved to be a brass containing approximately 60% copper, 39.5% zinc, 0.5% tin. When replaced by Duronze bolts, further failures were eliminated.

If total expenditures for water works and sewage equipment during the next ten years approximate the many millions of dollars estimated, it is sound policy to protect such an investment by specifying the most suitable materials for vital parts which can affect the operation of the entire installation. And of course all materials must be subjected to the most rigid examination before being specified for applications requiring engineering properties.

The materials used in drive chains in flocculators, screens, weir plates, scum baffles, grinders, paddles, and pump impellers must be capable of withstanding various corrosive liquids and gases as well as the action of excessive oxygen and wear. Duronze stands up satisfactorily under corrosion resulting from filtration and its acid solutions and from sludge digestion and the consequent liberation of carbon dioxide and other gases.

From the safety standpoint it is important that ladders, walkways, rails, and similar equipment be made from rust-resistant, high-strength, dependable material. Recently, Duronze steps were installed in the control well of a sewage disposal plant under construction in a large eastern city. These steps, anchored to the wall of the well, must withstand corrosion from a continuous flow of raw sewage and be safe to use when needed.

Many uses for Duronze alloys have been found in valves for stems, guides, bushings, etc. These alloys resist corrosion from water containing a high percentage of carbon dioxide, which dezincifies brass and manganese bronze. A leading manufacturer of valves who changed to Duronze for stems reports that it has outlasted other materials six to one. Here the combination of corrosion resistance, high strength, and wear resistance is required. In another valve, Duronze washers which must work against hardened steel nuts are used. This manufacturer states that other materials have a great tendency to freeze or gall. This is an example of how a small and apparently insignificant part can affect the operation of a valve which, in turn, may be vital to the successful functioning of an important part of the plant.

From the manufacturing standpoint, Duronze alloys lend themselves readily to hot forging, cold forging, or machining, depending upon the alloy selected. Physical properties and other important information regarding the Duronze series of high-strength engineering alloys will be supplied on request by the Bridgeport Brass Co., 30 Grand St., Bridgeport, Conn.

These steps are in to stay. They descend to a central well in the Bridgeport, Conn., sewage treatment plant.

Philadelphia Airport Plans

AN ULTIMATE airport system of forty-four airports, calling for twenty-eight new ones and continued use of the sixteen now in existence, is recommended for public and private development in the Philadelphia-Camden metropolitan area in a recent report released by Edward Hopkinson, Jr., chairman of the City Planning Commission. The report has been approved by the Civil Aeronautics Administration, the Pennsylvania Aeronautics Commission, and the Department of Aviation of the State of New Jersey.

The report forecasts that by 1935 there will be 3,500 private planes operating in the Philadelphia area. Over 600 planes are expected to arrive or depart each day on scheduled flights from commercial airports.

The plan calls for three commercial scheduled-flight airports, three commercial non-scheduled (service) airports, thirty-five personal plane and mixed operation airports, and three Naval airports. Of the three commercial scheduled-flight airports—the Southwest Airport, the Northeast Airport and one at a site in New Jersey approximately 5½ miles southeast of the center of Camden, the Southwest Airport was urged for immediate development along the lines proposed by the Bureau of Aeronautics, headed by J. Victor Dallin.

Twenty-seven of the proposed new airports are for personal plane and various commercial flying activities (mixed operations), and one is for commercial scheduled flights, serving the New Jersey portion of the metropolitan district.

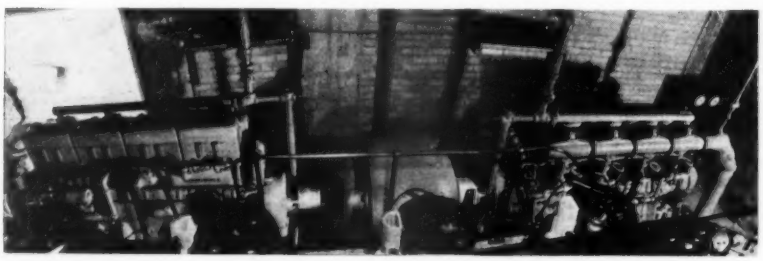
Although the CAA approval of the report does not commit CAA to the allocation of federal funds for the development of any or all of the facilities included, the report is a prerequisite to such allocation and will form the basis of the Philadelphia metropolitan section of the National Airport plan to be recommended to Congress by CAA.

A Vest Pocket Generator Set

NEEDLES, Calif., needed a reliable source of power. This part of California, despite Chamber of Commerce literature, gets its share of electrical storms that cause frequent transmission-line outages.

Consequently, Needles required a dependable standby to meet these emergencies. To meet certain specifications, the California Pacific Utilities Co., which furnishes power to Needles, placed in service a pair of Sterling 600-hp, natural-gas engines powering a single 875-kva generator. This is the way it met specifications:

- Its floor requirements were only 6 feet by 28 feet, including the generator.
- It has only one generator, which serves both engines.
- It has direct electric-battery starting.



It is power port and starboard on this condensed engine-generator set that uses a pair of 600-hp, natural gas-fired engines with a single generator.

- Its installed cost was approximately $40 per kw.

There was only one small space available for the engine-generator, and this was in a floor area of 7 feet by 36 feet, with 9½ feet taken out for a door.

To fit a motor-generator into this small space, the power engineers chose two Sterling Viking II 8-cylinder engines, placed end to end, with a General Electric 875-kva, 1200-rpm alternator set between the two engines and connected by a special coupling.

The engines use propane gas for fuel, obtaining it from the gas distribution system that serves the city. Exhaust stacks, carried outside the building, incorporate a heat exchanger for vaporizing the propane prior to admission to the carburetors. The operators control the temperature in the heat exchangers by bleeding a portion of the raw cooling water into the exhaust lines.

A dual panel system controls the engines. The engine panel proper contains starting switches, choke, and throttle as well as alarm-system indicators and manifold-pressure indicators. A single throttle control on panel #1 of the main switchboard synchronizes the engine-driven alternator when throwing onto the line. A regulating, remote, engine-throttle control at the engine panel brings manifold pressures to an equal reading and thereby divides the loads between engines.

Thus far, the engine-generator has lived up to the most optimistic expectations. One outage called for a continuous ten-hour run on the line, with the unit delivering 850 kw continuously for two hours out of ten.

E. K. Albert is vice-president and chief engineer of the California Pacific Utilities. The Needles plant is under the general supervision of E. C. Braswell, division manager, with Thomas B. White, plant superintendent, and H. W. Moore, plant engineer.

Operate Airports Regionally

ANY AREA, and in particular a metropolitan area, will get the greatest benefits from its airport facilities by operating them on a regional basis. This point is driven home by the Regional Plan Association, New York, N. Y., in a recent bulletin, *Major Regional Airports.*

State, county, and municipal boundary lines are an anachronism in an air age, the report emphasizes. Airport development and the utilization of airports in the New York region must be on a basis of close cooperation among the various governmental agencies involved. Three million people living in northern New Jersey will benefit greatly from the development of Idlewild as an international airport. Some other portions of this same area will find LaGuardia Airport conveniently accessible for domestic flights.

With a regional agency operating the airports, specialization in services for which the major ports are best adapted would, of course, be greatly facilitated. Idlewild would act as the center for the international service and for long-haul domestic service; Newark and LaGuardia for intermediate and shorter domestic routes. Disregarding international services, the domestic passengers alone will furnish enough business to keep LaGuardia, Newark, and Idlewild busy, which will force the fullest potential development of Newark as a dual-runway field and Idlewild as a dual- or triple-runway field.

Airlines Require Modern Airports

By GLENN L. MARTIN

FAILURE to develop a sufficient number of airports designed and equipped to handle a steadily increasing daily volume of passengers and cargo flights constitutes an immediate and serious threat to the nation's commercial aviation business.

The nation's airports, most of them laid out and equipped on the basis of long-obsolete air traffic studies, already are badly overloaded. Within seven or eight years, my own company will develop a commercial plane, vibrationless and soundproof, capable of transporting seventy-five people for 3,000 miles at 500 miles an hour. States and municipalities should go ahead with the development of adequate airport facilities for the immediate future, lest their communities fail to realize their proper share of new business activity as the country-wide volume of air cargo and passenger traffic increases.

Careful attention must be given to the design of new airport facilities to ensure that there are adequate provisions for expansion, as well as for efficient handling of passengers and cargo; for air cargo business ultimately will exceed the transportation of passengers in volume and economic importance. The transportation of vegetables, harvested when ripe and delivered by air to out-of-season markets while still garden-fresh and rich in vitamin content, is already the subject of extensive experimentation.

Airports will have to be large and runways long, since the trend has been to continue to increase loads per horsepower, making necessary longer runways and other take-off aids. Winter weather and overloaded airport and traffic control systems will make this a difficult season for the airlines, but radio, electronic, and other devices will bring a satisfactory solution to many of the weather and traffic problems.

Linden, N. J., Uses Bucket Rig to Clean Its Sewers

Flat grades and unusual trade wastes call for first cleaning job in twenty-five years, involving approximately a third of Linden's reinforced concrete trunk sewer system.

LINDEN, N. J., recently completed its first sewer cleaning job on a major scale in a quarter of a century. And City Engineer Jim Davison doesn't believe he would have been faced with this one, if war industries had not produced some unusual sewerage problems for him. For it has been only in the last four or five years that he has noticed the problem arising.

The problem was aggravated by the presence of a dam built in the river at the point where Linden's sewer outfall is located. This dam, constructed only a few years ago, caused the sewage to back up in the sewer during certain periods, thereby allowing solids to settle out.

Linden has on its post-war construction program a 23-mgd sewage treatment plant being designed by Alexander Potter and Associates, New York City, that will remedy this situation eventually. In the meantime, the settled accumulation had to be removed to give the sewer any hydraulic efficiency at all.

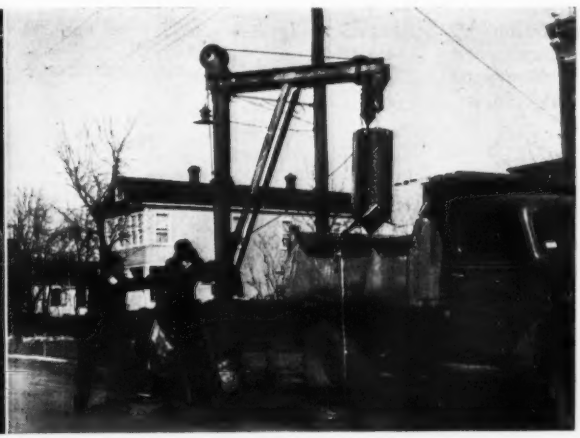
In particular, certain trade wastes began causing trouble in the sewer. These had a tendency to produce a quick-settling floc that did not carry itself in the sewage flow, but gradually filled the sewer and clogged many of the laterals. Linden is in a very flat area anyway, and the sewers had to be constructed on grades of only 0.04% to 0.05% in order to avoid numerous expensive pumping stations.

In view of the fact that the work piled up within a few years, and those years in a period when the manpower situation in the Linden sewer maintenance departments was uncomfortably low, Engineer Davison realized that he could not possibly do the job alone. Consequently, he awarded a contract for the work, specifying that the material in the sewer positively had to be removed from the sewer. To insure that the sewer was clean, he specified that a ring, not less than two inches smaller in diameter than the sewer's nominal diameter, should be drawn through it.

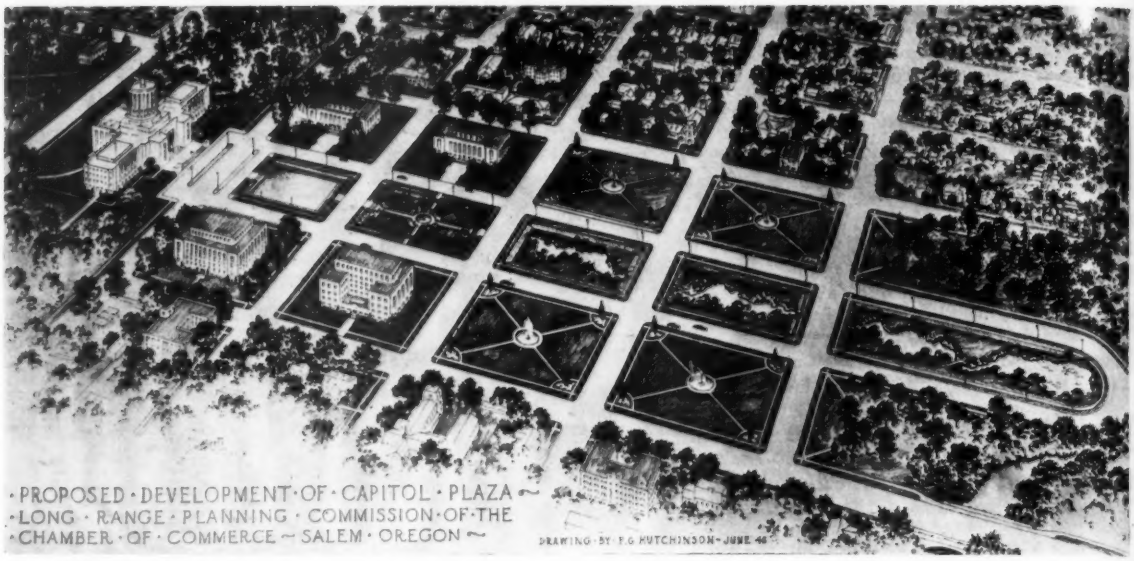
The contract, amounting to 4,170 feet of 48-inch pipe, 2,700 feet of 42-inch line, and 4,000 feet of 30-inch line, was awarded to the Pittsburgh Pipe Cleaner Co., Pittsburgh, Pa. The company brought in a motor-powered bucket rig with a set of buckets to fit each of the sewers. The crew set up the cable and windlass over a pair of manholes connecting a length of sewer, and drew the bucket back and forth, allowing it to pick up a load of dirt at each trip.

The bucket, which is at one end of the sewer, opens automatically at the bottom when the rig at the manhole at the other end starts pulling the bucket into the dirt and sediment. The bucket bottom closes automatically when the windlass at the opposite manhole starts drawing the bucket back after it has acquired a dirt-load. The cables pulled the bucket at an average of 50 feet per minute.

The buckets cleaned the entire sewer without difficulty. They even went through an inverted siphon and scooped it clean without any special precautions except that of using a smaller bucket to maneuver around the bends. They have removed about 2,000 cubic yards of dirt from the sewer.



Top: Paul Pruss, superintendent of the Linden cleaning job, examines one of the buckets. Left: A bucket loaded with dirt emerges from the manhole. Right: The operator places the bucket over the truck to be emptied.



A sketch of the plan for a capital plaza in Salem, Ore. The State Capitol Building, and the State Library adjacent to it at the upper left of the mall, are the two buildings already completed. A State Office Building (shown at the lower left of the mall) may be constructed this year. The other state buildings shown can be built as the state's needs expand.

Salem, Ore., Proposes Capital Plaza

THE first annual progress report of the Long Range Planning Commission of Salem, Ore., states: "Properly located and designed public buildings increase the efficiency and hence reduce the cost of government; moreover, they add tremendously to the beauty of the city. This latter fact results not only in sociological gains, augmented happiness, and general welfare of the citizens, but also in distinct financial gains because of its influence on tourist traffic."

The Long Range Planning Commission, in anticipating the future necessity for additional state buildings and perhaps one or two federal buildings in Salem, has suggested the ultimate enlargement of the capitol grounds to between seventy and eighty acres. The plan as proposed would provide space for at least six additional buildings, each on a separate block. Another important part of the proposal is that the capitol grounds, a post office site, and a county court house be incorporated as the nucleus of a civic center, and that future municipal buildings should be planned in conformity with the capitol group.

When the present State Capitol Building was erected in 1939 to replace the one destroyed by fire, the nearly ten acres of grounds was increased by two blocks to provide space for the State Library, completed the same year, and for a state office building, which may possibly be built this year. Current plans contemplate the addition of two blocks, to be acquired as needed.

According to Mr. C. A. McClure, engineer of the commission, all the area under consideration is zoned for residential use. If officially designated as the Capitol Grounds for future state buildings, there would be no reason to change the zone classification.

The present method of buying portions of the area only when needed for the expansion program has some advantages, Mr. McClure says. The blocks involved are almost entirely developed with residential buildings, and there is slight probability that there would be any new construction within the area officially designated for future capitol grounds. Therefore, the property would remain in private hands almost up to the time of state development.

South Africa's Experience with Sanitary Housing

THE AMERICAN CITY is indebted to Dr. Anson Phelps Stokes of the Phelps-Stokes Fund for a very significant statement recently published in *The South African Outlook*, showing the good effects of satisfactory housing conditions.

The report states that "in Sharpeville, Vereeniging's model Native Township, the children at the age of eight are on the average ten pounds heavier and three inches taller than those living in the old location. Their expectation of life has been more than doubled by their removal from lean-to hovels to neat rows of cottages on a gentle slope three miles to the west of the town. Figures compiled by the Ministry of Health show that the death rate has fallen from 32.8 per 1,000 to 12, while for every death from tuberculosis in Sharpeville there were two in the old location; from malnutrition, four; from gastro-enteritis, five; from pneumonia and bronchitis, six. . . . For some years the Council will accept a loss on each house, shared by the Government, but reckons that the account is more than balanced by the resulting 'contribution to the common pool of civilized behavior.'"

Excellent records—if less spectacular, perhaps, than those in South Africa—have been reported from the English garden cities and American communities where health conditions in the slums have been compared with those in modern low-rent housing developments. Has not the time come for many other communities at home and abroad to make similar contributions "to the common pool of civilized behavior"?

More Items from Our Municipal Notebook

(See also pages 5 and 7 of this issue)

To Check the Rising Spiral of Wages and Prices

WHEN the post-war movement for higher wages got under way, prices of finished products were advanced in many instances to an extent not required by increased costs. The situation was fraught with the two-fold danger of a buyers' strike and deflation on one horn of the dilemma, or of spiraling costs and inflation on the other.

Recent weeks have brought some cheering indications that sounder judgments are beginning to prevail, and that the peak of price advances has been passed. Especially significant is last month's action by International Harvester Company in reducing prices to an extent estimated to save users of its products some $10,000,000 a year.

This reduction was made, said the company's announcement, "because we believe there is nothing more important to this country than to lower the prices of the goods that people buy."

Harvester's price reductions apply to a selected list of products in the company's line of tractors, motor trucks, and industrial power equipment and farm machines.

In his statement on the new price reduction policy, John L. McCaffrey, Harvester president, said:

> The American people insisted that the government withdraw from its attempts to control prices in peacetime. That placed the responsibility where it belongs—in the hands of business and industry. Not all business can reduce prices now. Not all can reduce by the same amount. Our company has felt a duty to act as promptly as possible. In our case, the business outlook now makes it possible to move toward the goal of lower prices.
>
> Our ability to maintain this lower level of prices will depend in part on what happens to the prices and flow of materials that we buy from others. Because we believe price reduction is vital, we are willing to assume the risks that are involved. Our success will depend, too, on uninterrupted production at reasonable wage levels.

Racial Tolerance Advertised

MORE than seventy-seven transportation systems in various cities are displaying car cards containing anti-discrimination messages, which are prepared by the Institute for American Democracy, Inc.

In some instances, as in New York City, where subway and bus lines are municipally owned, space is made available for the cards by the city. The names of local officials can also be imprinted on the cards, a procedure followed in New York and in Quincy, Mass. In other municipalities, the space is paid for by local advertisers, in cooperation with various local commissions and committees established to avoid discrimination.

Eleven designs are now available in the series, all attractively printed in four colors. New designs, prepared in consultation with leading advertising and public relations men, are made available approximately every sixty days.

Local governments or citizens' groups interested in further information about the nominal cost of the cards and how to obtain and use the entire series should write to the Institute for American Democracy, Inc., 369 Lexington Ave., New York 17, N. Y.

Chamber Calls Zoning Fair

ZONING is fair, and zoning ordinances and procedures have been well-administered through the years, according to opinions expressed by chamber of commerce managers of more than thirty cities throughout the country.

In a recent survey conducted by the zoning committee of the Houston, Tex., Chamber of Commerce, the managers were requested to give their city's experience with the administration of zoning, and specifically to answer the question, "Has the administration of your zoning ordinance been fair to all alike?" The replies are presented, in full, in a mimeographed pamphlet issued by the committee as a public service.

The adoption of the first comprehensive zoning ordinance in this country by New York City in 1916 received the general approval of the courts. The courts recognized that zoning was an exercise of the community right to control the use of buildings and land, the height of buildings, and the space about them for the protection and preservation of public health, safety, comfort, and welfare. Zoning was recognized as a necessary step to prevent

Designed to combat race prejudice, this and other cards are prepared by the Institute for American Democracy.

utter chaos in municipal life, coming after years of unregulated city development. State enabling acts and municipal ordinances have now brought zoning into effect in almost every section of the country.

The replies of the chamber of commerce managers are encouraging, in that they show a high regard for zoning principles and manifest little or no evidence of political pressure or corruption in the administration of zoning ordinances. Several of the managers, however, declare that the particular ordinances are not strong enough and have not kept pace with the needs and changing conditions of their communities.

The reply from Louisville, where there is in existence the Louisville and Jefferson County Planning and Zoning Commission, points out the importance of city and county cooperation for some sort of supervision over rapidly developing sections outside city limits. Other answers emphasize the need for a comprehensive over-all city plan, if zoning is to be considered legally valid and is to have any long-range justification.

Zoning, in the past, has been primarily a method of protecting property values — and an eminently successful one. It is to be hoped that zoning, now that it has acquired such prestige, will be more widely recognized and used as an effective tool for the direction of community growth, development, and redevelopment.

A Six-Point Program for Building Code Reforms

THE Board of Governors of the Building Officials Foundation, 51 East 42nd Street, New York, N. Y., announced last month a comprehensive program for building code reforms. These six objectives are stressed:

1. To encourage the adoption by all communities of the basic building code promulgated by the Building Officials Conference, to the end that a countrywide uniform code be established and local codes kept up to date.

2. To assist communities in the administration of their building laws and regulations.

3. To reconcile local building codes with advances in the art of building so that structural design, equipment, construction materials, and methods may be progressively improved in the public interest.

4. To provide uniform testing procedures in consultation with industry to determine the adequacy of testing equipment, and to evaluate the integrity of equipment, materials, and methods of construction.

5. To make known promptly, to building officials everywhere, the results of the tests, in a manner compatible with the needs for such data in administering building rules and regulations.

6. To keep local, state, and federal officials concerned with public health and safety, and all other individuals and groups involved in the planning, building, equipping, and financing of buildings, informed of advances in building requirements and code administration and to supply them with news and data pertaining to better building and construction practices.

The principal service instrument of the Foundation is the basic building code of the Building Officials Conference. The code has been completed in tentative form. It has been prepared through the counsel and advice of seventy building officials who are geographically well distributed. The code is expected to be published in permanent form some time this year.

Markings for War Memorials

ANY proposed memorial should be judged according to the threefold purpose of gratitude, recollection, and inspiration. "There is no reason why a war memorial may not be useful, provided it unmistakingly proclaims the purpose for which it was erected, namely, to keep alive in the memory of this and future generations the heroic deeds of those who fought for their country," says a recently issued report on war memorials by the National Commission of Fine Arts.*

The illustrated brochure, issued as Senate Document No. 234, recommends that if a living war memorial is adopted, it should be well marked with tablets, archways, sculpture, or other such accessories, so arranged that annual memorial services may be conducted. Moreover, it should be amply financed to ensure its permanence.

A type of memorial deserving special consideration, according to the report, is the laying-out of a park area for commemorative purposes. Here the tablet, fountain, column, arch, building, or other such memorial structure may be combined with the general utility of a park area.

After a memorial program is decided upon, the National Commission of Fine Arts recommends that a period of one or two years be allowed to lapse before actual construction work is begun. This will allow added time for the most mature deliberation upon all aspects of the program, and permit alterations contingent upon changed conditions or resources.

*Readers of THE AMERICAN CITY are also reminded that copies are still available of this magazine's illustrated brochure on living memorials, *Commemoration Through Community Services.*

Juvenile Crime Necessitates Community Action

INCREASING attention is being focused on the startling upward trends in juvenile delinquency throughout the country, which also show some correlation with divorce-rate figures and the breaking up of homes and of traditional family relationships. Albert Deutsch, distinguished writer on medical and social affairs, revealed in a recent article in the *Woman's Home Companion*, entitled "Catch Me Before I Kill," that in one year teen-age killings have increased by twenty-five per cent, and that two murders daily are committed by American children.

Mr. Deutsch states that the case histories of teen-age murders invariably reveal that their crimes arise from twisted minds and emotions. He recommends that every school system should have adequate psychiatric and social work services, and that every large community should have at least one child-guidance clinic staffed by a competent psychiatric team.

Preventive Measures

The importance of getting aid to children and advice to parents at an early stage cannot be overemphasized. Many communities are taking preventive action to head off the alarming trends. One such approach is revealed in *Children in the Community: The St. Paul Experiment in Child Welfare*, a pamphlet by the Children's Bureau of the Federal Security Agency.[1] The essence of this plan, which can be undertaken by any community in the country, is that it establishes a "first-aid station," or referral center, to coordinate the community services for children and to provide individual assistance for boys and girls in trouble.

Some cities have made surveys of all the private and public agencies in the locality concerned with children, and listed the functions of each agency, so that those wanting aid or advice will know where to go and whom to see about a particular child's problems.

Other studies, such as that of the *Recreational and Cultural Resources Survey of the State of Washington*,[2] have directed attention to the need for positive recreational and spare-time programs, revolving around community centers and supported by the community as a whole.

There is no doubt that action must be taken on several fronts at once. The problem has now reached such proportions that no community can afford to ignore it.

[1] See page 151 of this issue.
[2] See page 71, THE AMERICAN CITY, March 1947.

Film Shows New Weed-killing Techniques

SCIENCE has made great strides in devising methods to prevent weed growth and to destroy the weed crop before it is able to overrun and crowd out useful plant life. Municipal officials concerned with parks, highways, playgrounds, golf courses, and gardens can obtain information about this subject through a new sound motion picture, "Death to Weeds," which is available without charge to interested groups.

The film covers the entire range of weed pests and was produced as the result of over 10,000 miles of travel on the part of the Jam Handy Organization camera crews for the sponsors, The Dow Chemical Company. The film, in natural colors, is supplied in 16-mm. form, and has a screen time of approximately twenty minutes. It opens with an "indictment" of weed pests which overgrow and crowd out crop plants, rob them of needed water and plant food, and harbor insects and plant diseases. It continues by showing that weeds ruin stock feeds, reduce crop and seed values, disfigure land, affect the national health (by causing hay fever, for instance) and make wide inroads into the national pocketbook.

The most modern techniques for weed-elimination are then pictured. In a time-lapse photography sequence the actual death of a weed which has been chemically treated is shown, revealing the physiological results of the chemical action. The picture explains that, by spraying with proper modern weed killers, weeds can be brought under control or actually destroyed outright, if desired.

The free loan of copies of the film may be obtained by writing to Millard Hooker, The Dow Chemical Company, Midland, Mich.

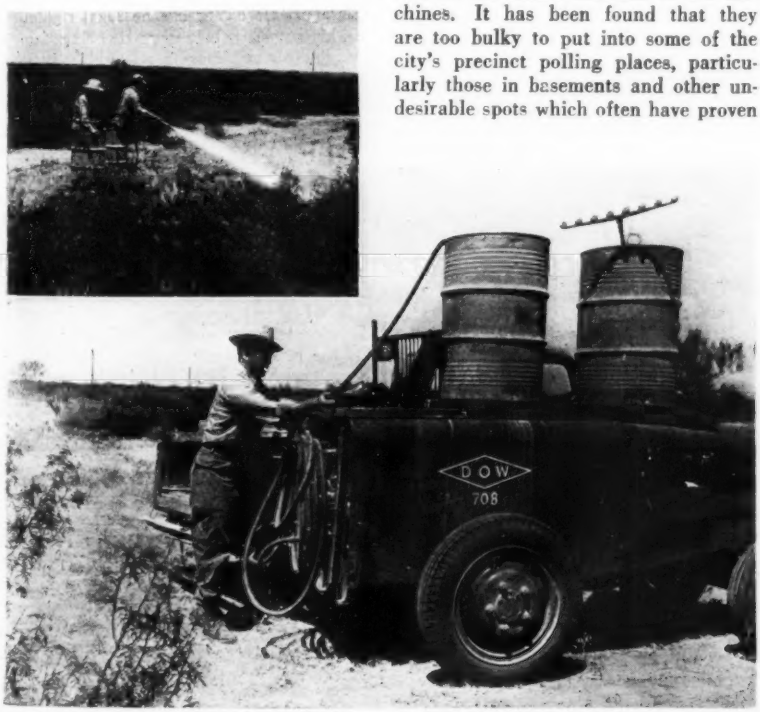
LYNN S. METCALFE

Chicago Tries Out Voting Machines

FIFTY voting machines were moved into public and semi-public buildings for use in the April 1 mayoral election in Chicago. The machines were the first shipment resulting from the approval by Chicago voters in the November election of a proposal to abolish the old-fashioned pencil and paper method of balloting in the city and substitute the modern automatic system.

"Lucky" citizens of the fifty precincts —one in each ward—were able to cast their votes for mayor by using the time-saving, tally-fraud-proof method of machine balloting. Before the election, the devices were installed in police and fire stations, park fieldhouses, and semi-public places such as theaters and hotels, so that they could remain on display and be inspected by the voters.

Another factor will also get consideration in the future location of the machines. It has been found that they are too bulky to put into some of the city's precinct polling places, particularly those in basements and other undesirable spots which often have proven psychological barriers toward getting out the vote. Efforts are being made to install the machines in buildings where they may be stored permanently, so that moving charges will be saved after each election.



By spraying, this modern equipment from The Dow Chemical Company, Midland, Mich., can bring weeds under control or actually destroy them, if desired.

New York Municipal Engineers Make Salary Study

HOW salaries for municipal engineers vary throughout the state, and how these salaries compare with private enterprise for the same type of work will be uncovered in a study now in progress by the New York State Association of Municipal Engineers. The salaries will be classified by position, grade, and responsibilities involved. It also will show the changes in salary rates that have taken place in the years 1938, 1942, and 1947.

The survey is being conducted by Arthur Richards, village engineer, Larchmont, N. Y., who is president of the New York State Association of Municipal Engineers. It is part of a national survey being made by the American Association of Engineers from its Chicago office. The survey will include about 1,000 cities throughout the forty-eight states.

The New York report will be presented to the municipal engineers at their annual meeting in Buffalo on June 19, while the national report of the American Association of Engineers will be presented in a book to be published about September.

Buying in a Bad Dream

LAST year, in submitting my annual report to the City Manager, I made the following statement: "With four years of wartime purchasing behind us, it is with great expectations and hope that the Department of Purchasing welcomes the peacetime of 1946."

Looking backward at 1946, our feelings are best expressed by the remark that has become a cliché during the past twelve months: "It's worse now than during the war." The year 1946 was a period of uncertainty and confusion. Nothing in our experience prepared us for the situation with which we have had to cope.

When one of our suppliers, who fortunately has a sense of humor, was asked the state of his business, he cheerfully replied: "Oh, very promising! The manufacturer promises merchandise to me and I promise it to my customers."

We understood exactly what he meant. In 1946, our purchasing business, too, was promising. Often we could extract no more than a promise

from our contractors and could do nothing but pass on empty promises to our using agencies.

In order to obtain passenger cars and other motor vehicles, we have had to waive all legal requirements. Informal bids were solicited and purchase orders awarded, waiving bid and performance bond requirements. However, in soliciting these bids, inquiries were set to all prospective bidders appearing on our mailing list. In other words, we followed the same procedure we would have followed had these bids been publicly advertised.

Realizing the utmost importance of replacing the obsolete units in our rapidly aging fleet, in September 1945 a survey was made of the automotive requirements of all city departments, and requisitions were prepared for all contemplated 1946 purchases. This enabled the purchasing department to get a head start in negotiating the purchase of a sizable fleet of equipment.

The purchases were made, of necessity, on a piecemeal basis because of the unwillingness of manufacturers to make commitments over a long period or to allocate to the city at any one time the quantity of equipment which we required. In this way 373 units, consisting of passenger cars, commercial units, heavy duty trucks, construction and engineering equipment, and fire apparatus, were purchased.

By H. F. WAGNER
City Purchasing Agent
Cincinnati, Ohio

Ten-year Tax Exemption

EXEMPTIONS from ad valorem taxes on a total of more than $45,000,000 in plant expansions and additions has been approved since December 1946 by the Louisiana Department of Commerce and Industry. The exemption of industry was made possible by a constitutional amendment approved by the voters of the state at last November's elections.

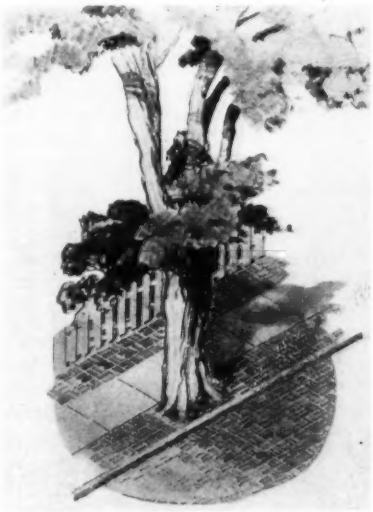
Although the results of the program have been unusually good thus far, Caye A. Nelson, the department's industrial agent, has indicated that he expects the volume of exemptions granted to increase. More than thirty additional applications are now being investigated by the department's field representatives, and the state's widespread advertising and promotional campaign is just getting under way.

The exemption of industry was made possible by a constitutional amendment approved by the voters of the state last November. Under the terms of the law, the Commerce and Industry Board, with the approval of the Governor, is authorized to grant exemptions for periods up to ten years for new industries, or additions and improvements to existing manufacturing plants, with the proviso that the approval of *competitive* industries in the same localities must be obtained.

Millbrook Plan Advocates Tree Preservation

STUDIES should be undertaken to develop means of preserving existing trees and projecting the planting of new trees, states *The Millbrook Plan*, a Planning and Zoning Committee report of the Village of Millbrook, N. Y. The report contains a proposal for tree preservation which may be found of general value by other municipalities.

Asphalt paving in many cases has caused trees to die by depriving the tree roots of their feeding area. To provide for seepage of rainwater to the tree roots, the report recommends that, wherever traditional grass strips are impractical, the village board require Belgian or other block to be laid with 1-inch joints without mortar within a 15-foot radius of any tree, except for



One way of preserving trees is suggested by the picture above. The blocks surrounding the tree are laid without mortar joints, to provide for seepage of rainwater.

area occupied by standard pavement, not to exceed 4 feet in width.

That Milbrook is aware of both the esthetic and economic value of trees is evident from another section of the study, which urges that the village study the possibility of increasing its revenues by a considered program of tree growth on its municipally owned land. Wood so harvested can be sold as cordwood or in other forms.

The Courts and Esthetics

To the Editor of THE AMERICAN CITY:

Planners are aware that the American doctrine that regulation of private property is unconstitutional if such regulations be based upon esthetic considerations has received some severe knocks in recent years at the hands of a few courts. But the general impression of unconstitutionality still survives in many quarters, and too many courts still cling to that outmoded, unrealistic, and uncivilized doctrine.

That American doctrine received its start through a misunderstanding and misapplication of an English decision back in Queen Elizabeth's day. As the doctrine is frequently stated in American courts, it has never really been the law of England. Additional evidence to this effect is presented by the Town and Country Planning Bill now pending in the British Parliament.

Under the provisions of this act, control and regulation of outdoor advertising—including prohibition, as well as location, appearance, size, and other details of outdoor advertising—are expressly stated to be based upon both "amenity" and "safety." Both rural areas and other areas which "appear to the Minister [of Town and Country Planning] to require special protection on ground of amenity" are brought within his jurisdiction. Moreover, exactly as under zoning principles, different areas may be differently restricted according to their location and character. The amenity of any part of a given area, or of any adjoining area, may be made the basis of the regulations, and, finally, existing injuries to neighboring property may be abated. Regulations may thus be made "retroactive."

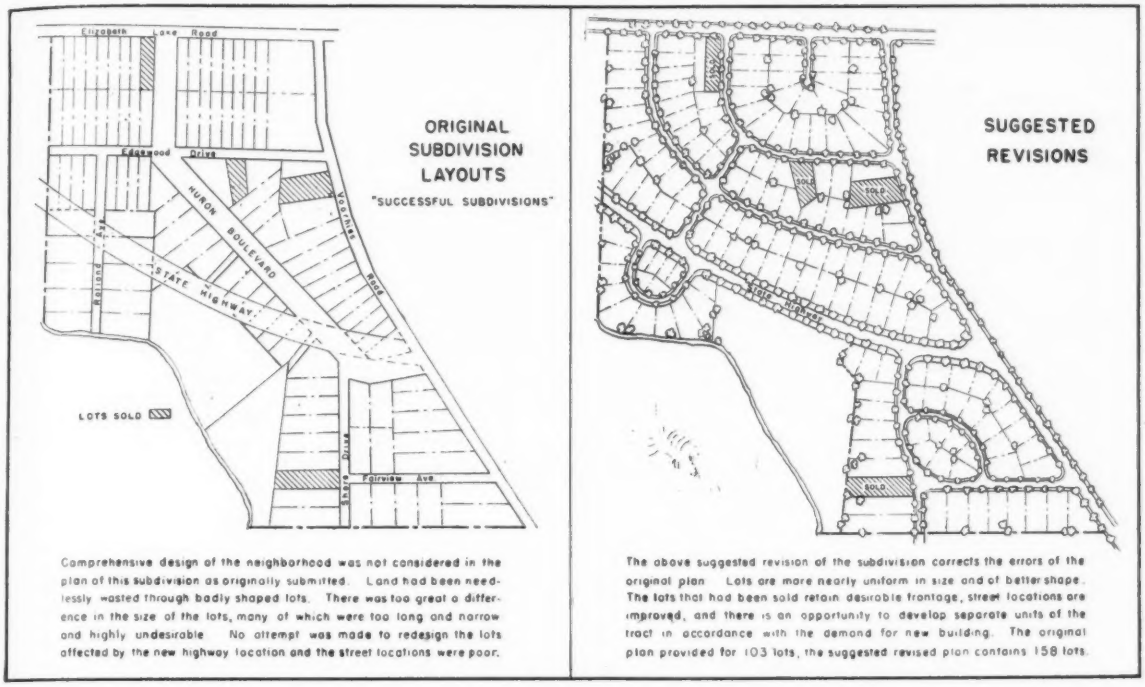
In other words, the ancient rule of law that a private owner has no legal right to use his property in a way to bring damage upon his neighbor—a rule which American courts have honored as frequently in the breach as in the observance—is given a practical application under this proposed statute, and the character of the offending property and of the damaged property are both to be taken into consideration in determining the amenities of the situation.

In the light of such an English precedent and of some courageous and realistic opinions by a few American judges, although often in the realm of dicta rather than of direct decision so far, perhaps America will yet civilize its law concerning the matter of public design and public amenity. Yet it may not be inopportune here to recall a constitutional amendment recommended to the 1938 Constitutional Convention in New York, but not adopted by it, reading as follows:

PLANNING AND CONSERVATION: The natural beauty, historic associations, sightliness and physical good order of the state and its parts contribute to the general welfare and shall be conserved and developed as part of the patrimony of the people, and to that end private property shall be subject to reasonable regulation and control.

Such an amendment should be in the constitution of every state in the Union where it is not already a recognized part of its common law.

ALBERT S. BARD
Counsel, National Roadside Council
New York, N. Y., February 1947.



Comprehensive design of the neighborhood was not considered in the plan of this subdivision as originally submitted. Land had been needlessly wasted through badly shaped lots. There was too great a difference in the size of the lots, many of which were too long and narrow and highly undesirable. No attempt was made to redesign the lots affected by the new highway location and the street locations were poor.

The above suggested revision of the subdivision corrects the errors of the original plan. Lots are more nearly uniform in size and of better shape. The lots that had been sold retain desirable frontage, street locations are improved, and there is an opportunity to develop separate units of the tract in accordance with the demand for new building. The original plan provided for 103 lots, the suggested revised plan contains 158 lots.

Building Boom Emphasizes Subdivision Control

THE dangers of premature subdivision and its consequent disastrous effects on municipal finance and debt structures are stressed in a 36-page manual on subdivision design and control recently issued by the Bureau of Planning of the New York State Department of Commerce.

"With a building boom developing in almost every locality, due to the pent-up demand during the war years and the preceding depression, it is impossible to overemphasize the importance of using the controls available for assuring well-designed subdivisions. Decisions made during this long time of greatly increased building activity may well spell the difference between long-lived, attractive development, or haphazard, ill-appearing subdivisions which may prematurely become blighted areas."

The above statement is made by M. P. Catherwood, Commissioner of the Commerce Department, in the foreword of the booklet.

The city or taxing unit is interested in superior subdivisions, the booklet states, because of the likelihood that assessments for improvements in the subdivision, as well as the other expenses of the governmental unit, can be laid against a sound and stable assessed value of the properties.

"Control of the number of lots," the manual continues, "may be accomplished by requiring the subdivider or developer of the subdivisions to pay for the cost of installing street pavements, sidewalks, sewers, storm sewers, and street trees. . . . Control of the quality of building lots is largely a matter of educating the public taste and acquainting developers, builders, subdividers, officials, and governing bodies of municipalities with the needs for, and advantages of, improved subdivision layouts."

By suggesting revisions in subdivision layouts, as above, planning boards can do a great deal to make subdivisions not only more attractive and conducive to neighborhood stability, but also considerably more profitable to the developer, who may have been lacking in imagination and knowledge of current subdivision skills and techniques.

$800 Houses—But With A $1 Daily Wage

IN HIS famous book, *Walden*, written just a century ago, Henry David Thoreau discourses at some length on the housing problem.

"In the savage state," he wrote, "every family owns a shelter as good as the best, and sufficient for its coarser and simpler wants, but [in 1847] in the large towns and cities where civilization especially prevails, the number of those who own a shelter is a very small fraction of the whole." The rest, he continues, pay an annual rent "which would buy a village of Indian wigwams, but now helps to keep them poor as long as they live." And, continues Thoreau:

"I do not mean to insist here on the disadvantage of hiring compared with owning, but it is evident that the savage owns his shelter because it costs so little, while the civilized man hires his commonly because he cannot afford to own it; nor can he, in the long run, any better afford to hire. . . .

"If it is asserted that civilization is a real advance in the condition of man,—and I think that it is, though only the wise improve their advantages,—it must be shown that it has produced better dwellings without making them more costly; and the cost of a thing is the amount of what I will call life which is required to be exchanged for it, immediately or in the long run.

"An average house in this neighborhood costs perhaps $800, and to lay up this sum will take from ten to fifteen years of the laborer's life, even if he is not encumbered with a family,—estimating the pecuniary value of every man's labor at $1 a day, for if some receive more others receive less;—so that he must have spent more than half his life commonly before *his* wigwam will be earned. If we suppose him to pay a rent instead, this is but a doubtful choice of evils. Would the savage have been wise to exchange his wigwam for a palace on those terms?"

Underground Terminal Planned in Jersey City

PLANS for an undergound bus terminal and parking facilities at Journal Square, Jersey City, are being considered by the Jersey City Planning Board. The Board of Chosen Freeholders of Hudson County, N. J., has already reviewed the plans, which were submitted by County Engineer Frank J. Radigan.

Radigan called attention to the action of the Port of New York Authority in committing the Authority to construction of a $15,000,000 bus terminal in New York City. He also called the board's attention to the legislation which has been introduced at Trenton to provide for underground parking facilities. The drawings submitted show a complete underground terminal and shelter, with direct access to the Journal Square Station of the Hudson and Manhattan Railroad.

Concerning the feasibility of the underground construction, Radigan's report stated that the underground bus terminal and shelters would provide a convenient central location for the beginning of, and rerouting of, various bus lines centering at Journal Square. This type of terminal and shelter would continue to develop Journal Square as a center of business activity, rather than dispersing business activity by constructing a terminal at some distance away from the Plaza.

Fire Losses to Get Attention

A NATIONAL fire prevention conference has been called in Washington by President Truman for May 6, 7, and 8. Methods of reducing fire losses will be discussed. A decided increase in fire losses in the nation during January is reported by the National Board of Fire Underwriters, 85 John St., N. Y. The figure is $57,180,000, an increase of 14.8% over January 1946. The year's total loss to January 1947 is estimated at $568,859,000 or 23.5% greater than in the preceding year, and 77% greater than in 1939. The reasons given by the National Board of Fire Underwriters follow:

A general letdown in public concern for safety, paralleling the emotional lull which follows war years.

Fire department equipment shortages due to lack of replacements during the war.

Factories located in outlying areas with inferior fire alarm systems.

Overcrowded buildings, with overstrained, worn heating plants and electrical circuits.

Housing conditions not meeting standards.

Increased value of property, merchandise, and large inventories.

Massachusetts Study Reveals Abundance of City Land Available for Housing

SPIKING arguments by speculative builders and subdividers that suitable land for home-building purposes is limited, and that therefore lots must be small if land costs are to be kept low enough for residential purposes, a recent report of the Massachusetts State Planning Board concludes that there is enough good building land zoned for moderate-priced dwellings and within easy commuting distance of the principal cities to rehouse the Commonwealth's entire population. In fact, there is thirty-five times as much land as necessary in Massachusetts to satisfy 1947 construction schedules within city limits and with water facilities.

The *Residential Area Survey* was undertaken to determine what areas in Massachusetts are available for moderately priced homes and rental housing. It was conducted in 190 municipalities, including 86% of the state's population. The findings showed that 1,283,600 acres of open land, in tracts of 5 acres or more, were suitable for residential development. Of this total suitable land, 507,900 acres, or 39%, can be developed immediately, being relatively vacant and reasonably accessible to water mains.

Of the 190 municipalities studied, 109 have zoning regulations. These zoned communities alone can legally accommodate more than 1,500,000 new, moderately priced dwelling units without violation of existing restrictions.

How Good Are Your Fire Inspections?

PERHAPS no other program of public safety requires as much civic cooperation as does fire prevention. Ignorance and negligence on the part of one or two individuals in a community can so easily lead to mass destruction. Do you know what fire inspection methods are employed in your town? Good inspection should indicate the structures and conditions which are potentially hazardous, and these should be a matter of public record since criminal negligence is punishable by legal machinery. To how many of the following can you safely say "yes"?

1. Are your firemen thoroughly and systematically trained by modern and approved methods?
2. Is the policy of your fire department preventive in application?
3. Are written records of inspections forwarded to the proper authorities for enforcement?
4. Are all homes, industries, schools, and public buildings inspected thoroughly at least quarterly?
5. Do local or state legislative enactments assist or hinder enforcement?
6. Are functional tests made of all fire extinguishing equipment (spot checks)?
7. Do fire inspectors give instructions to children in all the schools on how to use extinguishers, and on how to get out in case of fire?
8. Are coded maps made by fire department inspectors of potentially unsafe structures, and are police departments alerted to the hazards?
9. Are all theatres and places of amusement constructed and inspected in accordance with provisions set forth by the underwriters?
10. Have all hotels, hospitals, schools, churches, public buildings, and factories been placed in one of three categories: (a) fireproof and safe, (b) safe for use, and (c) unsafe—to be condemned?
11. Do the buildings which fall into categories (b) and (c) have fire drills and frequent inspections?

DONALD E. BEERS,
Training Administrator, Safety Engineer, and Consultant, Stewart Field, U. S. Military Academy, Newburgh, N. Y.

Cartoons Dramatize Need For Regional Cooperation

COURTESY OF TOMORROW'S TOWN

Left: The ungrateful family. Below: If the trunk withers, what will the branches live on?

COURTESY OF MILWAUKEE JOURNAL

IN these striking cartoons, the *Milwaukee Journal* and *Tomorrow's Town* have given emphasis to a community of interests too often overlooked in the rivalries between municipalities and their environs.

Four suggested methods of consolidating the governmental units of Milwaukee County have been under consideration in recent months. On January 7, City Attorney Walter J. Mattison asked municipal departments, bureaus, and commissions to consider the effect of such consolidation on the efficiency, costs, and functions of their governmental divisions.

The four proposals to be considered by the Council Judiciary Committee are: (1) turning Milwaukee's government over to the county; (2) providing one central city government for the county; (3) consolidating the ninety-six taxing units in the county, and (4) providing for a general metropolitan urban government which would include all the contiguous municipalities, whether inside or outside the county limits. The information obtained by the survey will be made available to councilmen, the City Attorney said, and will also be made ready for presentation to the state legislature.

The *Tomorrow's Town* editorial, accompanying a symposium on "Metropolitan Development," pointed out that:

> It would be oversimplification to regard the problem as one merely of competition between parent cities and suburbs. Most suburbanites draw their livelihood directly or indirectly from the central city; they are affected by any threat to the prosperity of the whole. Furthermore, the local autonomy of the suburbs frequently results in wasteful land use and heavy tax burdens through lack of integrated metropolitan controls.
>
> The real problem is to achieve by cooperation the benefits of regional master planning while preserving the cherished democratic processes in the individual communities. The value of complete political consolidation of the area is open to doubt and its acceptance even more so. . . . Establishment of a new mechanism which will be representative and at the same time effective, is indicated.

Noise Abatement Week— April 27 to May 3

NOISE Abatement Week will be held April 27 to May 3 in New York, Chicago, and hundreds of communities throughout the nation. The National Noise Abatement Council is sponsor of the annual event. Special observances have been planned by local councils, anti-noise committees and civic, professional, and business groups.

Paul J. Washburn, Secretary of the Noise Abatement Council, reports that police and health authorities in increasing numbers are cooperating in the continuous program to be extended this year to thousands of communities where the noise menace is growing. During Noise Abatement Week, local rallies will be held and radio, newspapers, advertising, and other channels will be utilized to enlist public cooperation in the project.

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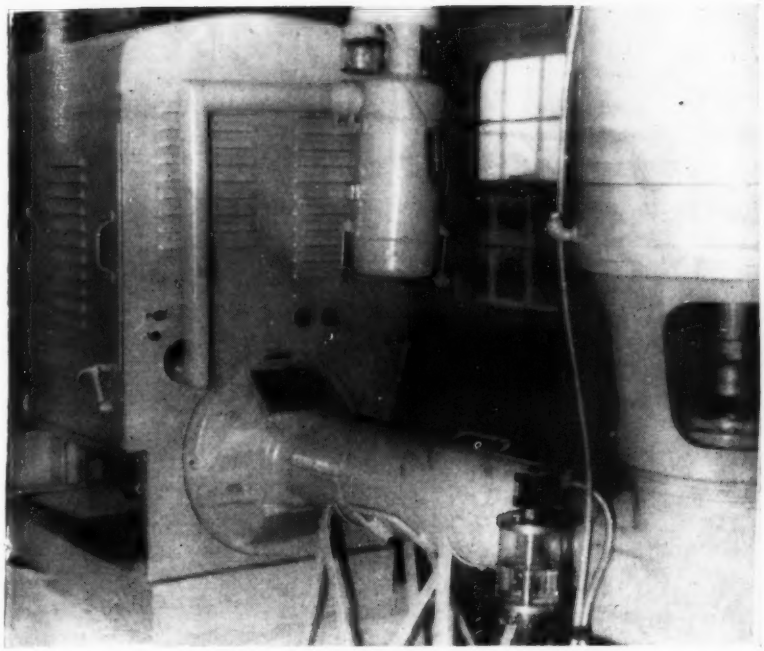

A Buda engine and a Layne pump help Margate, N. J., through power failures.

Margate, N. J., Gets Standby Power

MARGATE, N. J., isn't taking any more chances. In 1939, and again in 1944, hurricanes smashed the power lines and left the city without water. To eliminate a recurrence of such a situation, the city purchased a Layne pump that can be switched from electric power to power produced by a 60-hp Buda gasoline engine. The well installed by The Layne New York Co. is 810 feet deep, with a 50-hp electric motor used for normal operation. The pump supplies 770 gpm.

Surface Wash Correction by Alemite Fittings

THE Milwaukee, Wis., water purification plant had difficulty with its filter surface wash, but its problem was solved by using Alemite spray-nozzle fittings in the wash-water system.

The problem began in the spring of 1944 after four and one-half years of filter wash operation. Examination of the system showed that the metal around a number of orifices had been gouged out, much in the manner that metal would be cut when countersunk. Analysis showed that the souring action took place while backwashing, when the filter was in the expanded condition, and the sand was free to move about in the water and be sucked against the orifices by the vacuum created by the jet.

In experimenting with some sort of non-corrosive nozzle that could be supplied, the operators decided to try an Alemite fitting with the ball removed and the hole enlarged to ⅛ inch. The fittings worked excellently and prevented abrasive action on the base, showing, at the same time, an estimated probable use of fifteen to twenty years. Before placing the fittings in the pipes, the operators used Lubriplate ♯130-AAA grease on the threads. To protect the exposed threads they applied Wailes Dove-Hermiston Bitumastic ♯50 coating over the ♯70 primer.

In a Milwaukee surface wash, all water leaving the jet is squirted at a plane parallel to the horizontal plane of the filter sand when drained. As a result, the holes had to be drilled on each side of the pipe at an angle of 180° and in perfect plane. This operation necessitated careful attention to the machining task. The water works machinists, however, were able to perform the drilling accurately and successfully.

The use of the jets was explained in a paper delivered before the Wisconsin section meeting of the American Water Works Association in Green Bay by Herbert C. Schmitt, assistant superintendent of filtration of the Milwaukee Water Purification Plant.

Toledo Begins Rubbish Collection

TOLEDO, Ohio, has increased its refuse collection and disposal service by collecting rubbish as well as garbage. The program was established all over the city by the end of March.

John H. Jewhurst, Director, Department of Public Service, said the plan is being carried on in the following way:

1. Providing weekly collection from November 1 to May 1, and one collection every two weeks from May 1 to November 1.

2. The city is divided into seven districts, each served by two to four crews. Each crew consists of five laborers and one truck driver: two men ahead for pull-out, two men with the unit for loading, and one man for set-back. A foreman is in charge of each district, and a superintendent of waste collection controls the operation, which will function as a branch of the Division of Streets.

3. Twenty routes have been established, and twenty-two Leach Refuse Getters with a capacity of 13 cubic yards have been provided. Twenty of the trucks are used for regular service and two for standby.

Toledo has at present twenty-eight refuse collection units of the same type, varying in size from 6 to 13 cubic yards, that are now employed for the garbage collection service.

Part of Toledo's new fleet of refuse getters that specialize in rubbish collection.

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ZONING *and* PLANNING NOTES

Edited by
NORMAN WILLIAMS, JR.
with the assistance of
FRANK B. WILLIAMS
and
EDWARD M. BASSETT

Covenants Against Multiple Dwellings

NEW YORK. *Heller* v. *Seltzer*, 67 New York Supplement (2d) 456 (New York Supreme Court, January 17, 1947).

A covenant signed in 1893 forbade the use of a group of buildings, on 74th Street between Madison and Park Avenues in Manhattan, for "any apartment house, flats or tenement house, hotel, hospital or asylum". Several owners were planning to convert some of these old mansions to modern multiple-family dwellings, which would retain the same general outside appearance—a practice not in existence until long after the covenant. Other owners sought an injunction.

In the opinion, the Court followed the usual practice of construing restrictive covenants rather strictly. If it was desired to set a limit on the number of families in a building, the covenant could have expressly forbidden all multiple-family dwellings. When, however, as here, a covenant forbade certain named types of multiple-family dwellings, its restrictions were limited to the types named and others of the same general character. Since the multiple-family dwellings proposed here retained the general residential appearance of the original buildings, the conversion was held not to be forbidden by the covenants.

The Court also held that there had been such a substantial change in the character of the neighborhood that the covenants would not be enforced at all.

Airport as a Nuisance

GEORGIA. *Elder* v. *City of Winder*, 40 South Eastern (2d) 659 (Georgia Supreme Court, November 13, 1946).

In this case a public airport was being planned, apparently with one north-south runway. The trustees of the Chapel Christian Church and Cemetery, which was situated immediately south of the end of the proposed runway, claimed that airplanes would be constantly passing over their property at an elevation of about 50 feet, and sought to enjoin the project. It was alleged that airplanes would necessarily be roaring by during church services and funerals, and would probably deposit dust on the church and cemetery, and so an injunction was asked on the grounds of both nuisance and trespass.

The Court's opinion restated (from the Georgia Code) the familiar doctrine that an alleged nuisance under construction would be enjoined only if the expected damage was not merely possible but reasonably certain to ensue. Since in this case the information presented on the runways was apparently not detailed, and since there is a legal presumption that public officials will carry out their duties in the most proper manner, the Court held that the dangers feared here were merely speculative and refused the injunction.

Even more than the Kentucky night football case reported last month, this case illustrates the fantastic wastefulness of retaining the doctrine of nuisance as a device in planning and controlling land use. In this instance, the next step is to go ahead and build the airport at enormous expense, subject to possible subsequent retroactive prohibition.

Pennsylvania Redevelopment Law Upheld

PENNSYLVANIA. *Belovsky* v. *The Redevelopment Authority of the City of Philadelphia*, still unreported. (Common Pleas Court No. 1, Philadelphia, December 14, 1946.)

In this case the Philadelphia Redevelopment Authority program for acquisition of blighted land, redevelopment, and resale, under the 1945 Pennsylvania Urban Redevelopment Law and Redevelopment Cooperation Law, was challenged, then upheld under the doctrine of "public purpose."

In *Dornan* v. *Philadelphia Housing Authority*, 331 Pennsylvania 209, upholding the USHA program, slum clearance and public housing were established firmly as public purposes and proper subjects of the police power in Pennsylvania. When the challenger here, therefore, maintained that such redevelopment was limited to housing, the Court replied by extending the principle of that opinion, and by noting again a general legal trend toward aiding land planning. As municipal concern with slum clearance expressed a "will to self-preservation," similarly the survival and healthy development of the city required the removal of blighted areas; in terms of practical municipal well-being and of governmental power, no legitimate distinction could be recognized between residential slum clearance and redevelopment of blighted industrial or business areas. The opinion thus reflects a realistic understanding of the inter-relation of different kinds of urban blight.

As usual, since the legal syntax tests the validity of redevelopment programs in terms of "private" or "public purpose," the serious question came in connection with the provisions for resale and redevelopment by private owners. This procedure was upheld for two reasons. First, the Court found it difficult to believe that any action involving immediately taking the government out of business could be very wrong. Second, since the Redevelopment Authority resold the land subject to restrictive covenants which would require fulfillment of the statutory aims, it was upheld that these covenants protected and ensured the "public purpose".

Rezoning from Industrial to Apartment Use Held Unconstitutional

ILLINOIS.—2700 *Irving Park Building Corporation* v. *City of Chicago*, 69 North Eastern (2d) 827 (Illinois Supreme Court, November 20, 1946).

A 53-acre tract in a generally industrial district in Chicago, just west of the north branch of the Chicago River, had long been used for brickyards and then for dumping, and was zoned for industrial purposes, except for strips of a business zone along two bordering streets. In 1940 two light-metal manufacturing companies bought the tract for factory use. Several neighborhood groups began considerable agitation for rezoning and took the issue into a political campaign, evidently in order to keep the area open for eventual dedication as a park. As a result the area was rezoned in 1943 for apartment use. While there was apparently some need for apartments in the same ward, the evidence as to the suitability of this particular piece of land for such use was not too convincing. At any rate, the Court accepted the theory that zoning the area for apartments was really a device to prevent use for factory or any other purposes, until the time was propitious to get the city to make a park there. It was then held that, since the area was not suited for apartments, the rezoning did not bear any reasonable relation to public health, comfort, safety, morals, or welfare, and was therefore unconstitutional. Under this theory, an ordinance restricting the use of a tract can only serve the specified statutory standards if the area is in fact suited for the purpose then named, and would not do so by preserving the area for another use in the future.

National Conferences to be held during April and May, at which planning and zoning problems will be discussed, include the annual conventions of the following:

AMERICAN PLANNING AND CIVIC ASSOCIATION (MILWAUKEE, April 28-30).

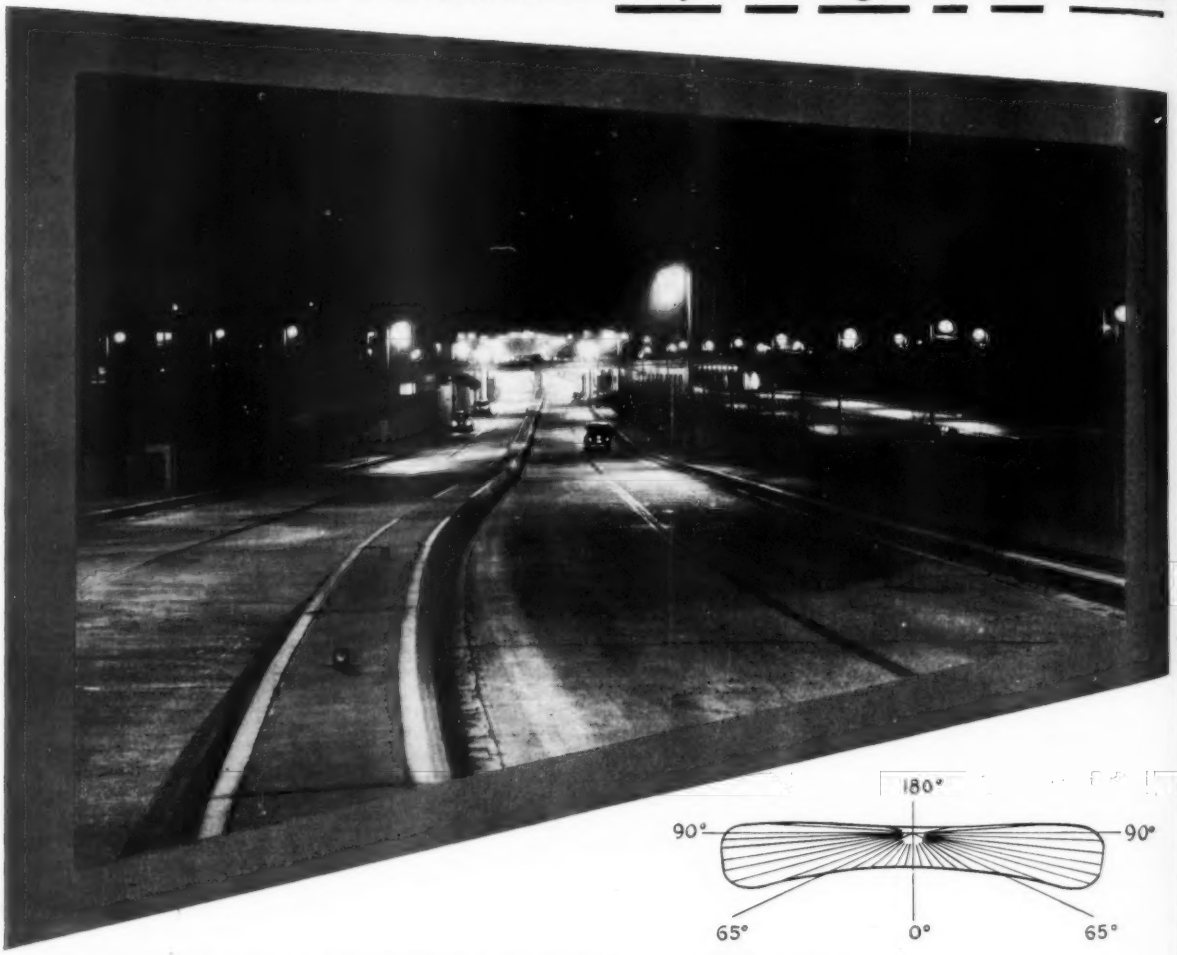
AMERICAN INSTITUTE OF ARCHITECTS (Grand Rapids, April 29-May 1).

AMERICAN SOCIETY OF PLANNING OFFICIALS (Cincinnati, May 5-7).

See convention calendar, page 129 of this issue.

Efficient STREET LIGHTING *Depends on Proper* DISTRIBUTION

HOLOPHANE REFRACTORS *Shape the Light to the Street*



The importance of proper light distribution for traffic illumination is stressed in the newest code "Recommended Practice of Street and Highway Lighting 1945" issued by the Illuminating Engineering Society. Five "ideal" distribution types are recommended to meet most street and highway lighting needs. *Holophane Refractors meet each of these exacting specifications.*

TYPE II distribution is for luminaire locations at or near the side of the street. It is a narrow distribution with a lateral width up to approximately 25 degrees. Two beams of light are directed up and down the street. Light that would normally fall outside the area is largely directed to the roadway. This result is accomplished with *Holophane C-WAY Refractors.*

Write for reprints of "Recommended Practice of Street and Highway Lighting" from I.E.S. Transactions. No obligation.

Because they provide maximum efficiency and economies in operation and maintenance Holophane Refractors are the essential light controlling element in luminaires produced by leading manufacturers of street lighting equipment. Be sure to *Specify Holophane Refractors.*

Holophane

HOLOPHANE COMPANY, INC. . . . *Lighting Authorities Since 1898*

Street Lighting Department, Newark, Ohio • Holophane Co., Ltd., 385 Yonge St., Toronto, Can.

Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

***April 11-12—Newark, N. J.**
NEW JERSEY SOCIETY OF PROFESSIONAL ENGINEERS. State Convention (Essex House). Chairman Publicity Comm., Peter J. Gannon, Department of Conservation, 1060 Broad St., Newark 2, N. J.

***April 11-12—Lincoln, Neb.**
NEBRASKA SECTION OF AMERICAN WATER WORKS ASSOCIATION. Annual Meeting (Cornhusker Hotel). Sec. J. W. Kruse, City Hall, Lincoln 8, Neb.

April 13-19—San Francisco, Calif.
NATIONAL CONFERENCE OF SOCIAL WORK. Annual Meeting (Civic Auditorium). Gen. Sec., Howard R. Knight, 82 N. High St., Columbus 15, Ohio.

April 14-16—Fayetteville, Ark.
ARKANSAS WATER AND SEWAGE WORKS CONFERENCE. Annual Conference (Engineering Building). Sec., Harrison Hale, University of Arkansas, Fayetteville, Ark.

April 14-16—Montreal, Canada.
AMERICAN WATER WORKS ASSOCIATION—CANADIAN SECTION. Annual Convention (Mount Royal Hotel). Sec., Dr. A. E. Berry, Ontario Dept. of Health, Parliament Bldg., Toronto, Ontario.

April 17-18—Chicago, Ill.
AMERICAN WATER WORKS ASSOCIATION—ILLINOIS SECTION. Spring Meeting (Congress Hotel). Sec.-Treas., H. A. Tolburg, 2020 S. Fifth St., Springfield, Ill.

April 23-24—Havre, Mont.
MONTANA SEWAGE WORKS ASSOCIATION. Annual Meeting (Havre Hotel). Sec.-Treas., H. B. Foote, State Board of Health, Helena, Mont.

April 24—Atlantic City, N. J.
NEW JERSEY MOSQUITO EXTERMINATION ASSOCIATION. Annual Meeting (Hotel Haddon Hall). Sec., T. D. Mulhern, New Brunswick, N. J.

April 25-26—Havre, Mont.
AMERICAN WATER WORKS ASSOCIATION—MONTANA SECTION. Annual Meeting. Sec., C. W. Brinck, State Board of Health, Helena, Mont.

April 28-30—Milwaukee, Wis.
AMERICAN PLANNING AND CIVIC ASSOCIATION. Citizens Conference on Planning (Hotel Pfister). Exec. Sec., Miss Harlean James, 901 Union Trust Bldg., Washington, D. C.

April 28-May 1—Washington, D. C.
CHAMBER OF COMMERCE OF THE UNITED STATES. Annual Meeting (Chamber of Commerce Building). Gen. Mgr., Ralph Bradford, 1615 H St. NW, Washington, D. C.

April 29-May 1—Grand Rapids, Mich.
AMERICAN INSTITUTE OF ARCHITECTS. Annual Convention (Pantlind Hotel). Sec., A. C. Robinson, 1741 New York Ave., NW, Washington, D. C.

May 2-3—Washington, D. C.
NATIONAL RIVERS AND HARBORS CONGRESS. Annual Convention (Chamber of Commerce Building). Sec., Fred D. Beneke, 1615 H St., NW, Washington, D. C.

May 5-7—Cincinnati, Ohio
AMERICAN SOCIETY OF PLANNING OFFICIALS. Annual Meeting (Netherlands Plaza Hotel). Exec. Dir., W. H. Blucher, 1313 East 60 St., Chicago 37, Ill.

May 7-9—Indianapolis, Ind.
AMERICAN WATER WORKS ASSOCIATION—INDIANA SECTION. Annual Meeting (Antlers Hotel). Sec.-Treas., Charles Bechert, Room 200, Underwriters Building, Indianapolis, Ind.

***May 15-16—Washington, D. C.**
MARYLAND-DELAWARE WATER AND SEWERAGE ASSOCIATION. Annual Meeting (Hamilton Hotel.) Sec., E. Virginia Gipe, 2411 N. Charles St., Baltimore 18, Md.

May 15-16—Port Angeles, Wash.
ASSOCIATION OF WASHINGTON CITIES. Annual Meeting. Acting Sec., Joshua H. Vogel, University of Washington, Seattle, Wash.

May 15-17—Victoria, B. C., Canada
AMERICAN WATER WORKS ASSOCIATION—PACIFIC NORTHWEST ASSOCIATION. Annual Convention (Empress Hotel). Sec.-Treas., Fred Merryfield, Department of Civil Engineering, Oregon State College, Corvallis, Ore.

May 18-20—Philadelphia, Pa.
PENNSYLVANIA STATE ASSOCIATION OF TOWNSHIP COMMISSIONERS. Annual Conference (Benjamin Franklin Hotel). Sec., H. A. Fritschman, Havertown, Pa.

May 21-22—Lafayette, Ind.
INDUSTRIAL WASTE UTILIZATION CONFERENCE. Annual Conference (Purdue Memorial Union Building). Chairman, D. E. Bloodgood, Purdue University School of Engineering, Lafayette, Ind.

May 21-23—Cleveland, Ohio
AMERICAN PUBLIC POWER ASSOCIATION. Annual Convention (Hollenden Hotel). Gen. Mgr., Carlton L. Nau, 1129 Vermont Ave. NW, Washington 5, D. C.

***May 22-23—Grenada, Miss.**
MISSISSIPPI MUNICIPAL ASSOCIATION. Annual Convention (Grenada Hotel), Exec. Sec., C. D. Ross, 610-1st Federal Savings and Loan Building, Jackson, Miss.

May 26-29—Chicago, Ill.
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Meeting (Palmer House). Managing Director, Percy Bugbee, 60 Batterymarch St., Boston, Mass.

May 26-29—New York, N. Y.
MUNICIPAL FINANCE OFFICERS' ASSOCIATION OF UNITED STATES AND CANADA. Annual Meeting (Hotel Pennsylvania). Exec. Sec., Miner B. Phillipps, 1313 East 60 St., Chicago 37, Ill.

May 26-27—Albany, N. Y.
NEW ENGLAND SEWAGE WORKS ASSOCIATION. Joint Spring Meeting with NEW YORK SEWAGE WORKS ASSOCIATION (Hotel Ten Eyck). Sec.-Treas., W. E. Merrill, 511A State House, Boston, Mass.

May 27-28—Asbury Park, N. J.
AMERICAN SHORE AND BEACH PRESERVATION ASSOCIATION. Annual Convention (Berkeley-Carteret). Sec.-Treas., Peter J. Gannon, 1060 Broad St., Newark 2, N. J.

June 4-6—Saratoga Springs, N. Y.
NEW YORK STATE ASSOCIATION OF CITY AND VILLAGE CLERKS. Annual Meeting. Sec., B. Nedd Sparks, Tupper Lake, N. Y.

June 5-6—Estes Park, Colo.
COLORADO MUNICIPAL LEAGUE. Annual Convention (Estes Park City Hall). Exec.-Sec., H. A. Storey, 327 Nortin Library, Boulder, Colo.

***June 11-13—Duluth, Minn.**
LEAGUE OF MINNESOTA MUNICIPALITIES. Annual Meeting (Hotel Duluth). Exec. Sec., C. C. Ludwig, 15 University of Minnesota Library, Minneapolis 14, Minn.

***June 11-13—Yankton, S. D.**
LEAGUE OF NORTH DAKOTA MUNICIPALITIES. Annual Meeting (Charles Gurney Hotel). Sec., R. D. Falk, Vermillion, S. D.

June 18-20—Buffalo, N. Y.
NEW YORK STATE CONFERENCE OF MAYORS AND OTHER MUNICIPAL OFFICIALS. Annual Meeting (Hotel Statler). Exec.-Sec., Morgan Strong, 6 Elk St., Albany, N. Y.
MUNICIPAL ENGINEERS ASSOCIATION. In conjunction with New York State Conference of Mayors. Annual Meeting. Sec.-Treas., Raymond W. Murphy, 61 Old Post Road, Rye, N. Y.

***June 19—Newark, N. J.**
AMERICAN WATER WORKS ASSOCIATION. NEW JERSEY SECTION. Outing. Sec., C.. B. Tygert, Box 178, Newark 1, N. J.

***June 23-25—Cincinnati, Ohio**
NATIONAL ASSOCIATION OF TAX ADMINISTRATORS. Annual Meeting. Exec. Sec. Charles F. Conlon, 1313 E. 60th St., Chicago, Ill.

July 8-11—Winnipeg, Canada
CANADIAN FEDERATION OF MAYORS AND MUNICIPALITIES. Annual Conference (Hotel Royal Alexandria). Exec. Director, Miss J. Allan, Mount Royal Hotel, Montreal, Quebec.

July 21-23—Wilkes-Barre, Pa.
PENNSYLVANIA CHIEFS OF POLICE ASSOCIATION. Annual Meeting (Hotel Sterling). Sec., F. B. Titus, 80 Price Ave., Lansdowne, Pa.

July 21-23—Salt Lake City, Utah
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Convention (Hotel Newhouse). Sec.-Treas., George F. Simmons, Ogden, Utah.

July 21-25—San Francisco, Calif.
AMERICAN WATER WORKS ASSOCIATION AND THE FEDERATION OF SEWAGE WORKS ASSOCIATIONS. Annual Conference. Sec., A.W.W.A., H. E. Jordan, 500 Fifth Ave., New York, N. Y. Sec., F.S.W.A., W. H. Wisely, 325-26 Illinois Bldg., Champaign, Ill.

July 22-24—Elmira, N. Y.
NEW YORK STATE ASSOCIATION OF CHIEFS OF POLICE. Annual Meeting (Mark Twain Hotel). Exec.-Sec., R. W. Morris, Box 203, Capital Sta., Albany 1, N. Y.

Aug. 18—New York, N. Y.
EASTERN ASSOCIATION OF FIRE CHIEFS. Annual Convention (Pennsylvania Hotel). Sec., Chas. E. Clark, Box 271, Wayne, Pa.

Aug. 19-22—New York, N. Y.
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Convention (Pennsylvania Hotel). Exec.-Sec., Daniel B. Tierney, 8 Robbins Road, Arlington, Mass.

The City Tells Its Story

(*Continued from page* 84)

met; but individual departmental data have been combined and selected with great skill in harmony with the basic theme: to show what Municipal Berkeley means in the life of its typical family. Where city equipment and facilities are shown they have been purposely played down. The result is a wholly natural tone in every one of the pictures—and a consequently high reader appeal.

You can read *A Berkeley Portrait* in less than ten minutes. (That's something to think about when you're working up your next annual report!) Yet the short captions carrying the picture sequence and following the activities of the Hawkins family are packed unobtrusively with pertinent facts on city activities during the fiscal year covered. This annual report rates highly; it's a notable piece of public relations. Berkeley *portrays* its story—and it gets across!

GOOD STREET LIGHTING

A civic benefit you can measure

#3 . . . in crimes prevented

WHEN adequate modern lighting chases the shadows from a city's streets—most criminals run, too.

In the words of Richmond's Chief of Police, "Crime and lighted streets don't go together." The city of Syracuse, in a recent report, stated: "Proper street lighting is a most efficient supplement to the police department in the matter of crime prevention and control." The police commissioner of Chicago also subscribes to this belief—"Crime seldom thrives where there is light."

Statistically, coast to coast, available figures indicate a 40 per cent decrease in crime when streets are adequately lighted. Thus modern street lighting pays for itself *many times over* . . . in robberies and assaults prevented, in a greater sense of security for pedestrians and householders. You get its other benefits as an extra dividend: reduced traffic accidents, increased real estate values, improved night shopping, greater attraction to new industries.

For ideas you can use in selling better street lighting to your community, contact your electric utility or write for "Evidence" just published by The Street & Traffic Safety Lighting Bureau, 155 East 44th St., New York City.

GOOD STREET LIGHTING
THE SIGN OF A GOOD PLACE TO LIVE

LEGAL NOTES *and* DECISIONS

Prepared by
NATIONAL INSTITUTE
of
MUNICIPAL LAW OFFICERS

CHARLES S. RHYNE
General Counsel

Personal Liability

When Supervisory Officer or Employe of Municipality Is Negligent While in Discharge of His Duties

IT IS a well-established general principle of law that an officer or employe of a municipality is personally liable to one injured by his negligence while in the discharge of his duties, and that rule applies whether the city would or would not be liable for damages arising out of the particular act. Nor does the rule apply only to a restricted class of officers or employes. It applies from the mayor and council right on down the line. The principles enunciated by C. L. Chamberlain before the Convention of Town and Highway Superintendents' Association,* though all New York cases, are still the general rule throughout the country.

Negligent Acts of Subordinates

It is, of course, to be understood that officers are not liable for the negligent acts of subordinate employes merely because of their relation. Some negligent act or omission on the part of the superior must contribute to the injuries before he can be held personally liable. In the case of *Ferneilus et al.* v. *Pierce et al.*, 123 Pac. (2d) 910 (Calif. App., Mar. 26, 1942) it was held that the City Manager and Chief of Police of the city of Oakland were not liable in damages for the death of a prisoner at the hands of a police officer on the theory of "respondeat superior," as that doctrine is not applicable to public officers. However, where they do take part in the negligent act which results in damages, they are personally liable.

Authority No Factor

In the case of *Aaron* v. *Brailes* (1885) 64 Texas, 316 53 Am. Rep. 764, it appeared that under authority of a city ordinance the Mayor and Councilmen ordered the Marshall to remove from a city a child stricken with smallpox; that the child and its mother were so removed and installed in a tent in the country exposed to the rain and sleet; and that both died within a few days. It was held that the fact that the city officers acted under authority would not relieve them from personal liability for their negligent treatment of the child and its mother while performing their duties.

In an Iowa case, a city commissioner was held liable for damages for personal injuries arising out of an accident in which he was being driven around the city in the course of his official duties by an employe of the city, where the driver was alleged to be incompetent, such fact was known to the defendant, and the driver was guilty of specific acts of negligence resulting in injuries to the plaintiff. *Rowley* v. *City of Cedar Rapids* (1927), 212 N. W. 158, 53 A.L.R. 575.

It has frequently been held that firemen are liable in damages to one injured by negligent driving. An illustration of that case is the case of *Florio* v. *Jersey City, Same* v. *Schmoltz*, (1925) 129 Atl. 470, 40 A.L.R. 1353, which arose in New Jersey. In that case, it was held that a driver of a fire truck is liable in damages to one injured by his negligent driving, although he is a servant of the city and in the performance of his duties. It was pointed out, however, that where a public officer does an act under lawful authority and free from negligent conduct, he is absolved from all liability. In an action against the chief of a fire department for alleged negligence in failing to have the fire department present at a fire, whereby the plaintiff's house was destroyed, it was held that there was no evidence to show that the presence of the defendant with his apparatus would have been of any avail to prevent the destruction by fire, as there was no proof offered to show that there were hydrants or water mains or other means of fire fighting in the vicinity. *Walter* v. *Meador* (1902) 75 App. Div. 612, 77 N.Y.S. 407, 11 N. Y. Annot. cases 225.

Immunity by Law

It appears that, in some cases at least, immunity can be granted by law. In the case of *Hansen v. Raleigh*, 63 N. E. (2d) 851 (Ill. Nov. 21, 1945), where a law granted immunity to a member of the municipal fire department of the town of Cicero while operating a motor vehicle engaged in the performance of his duties as a fireman, it was held that such a law is not in violation of a constitutional provision prohibiting any local or special law granting special or exclusive privileges, immunity, or franchise, in that there is a reasonable basis for the classification adopted by the General Assembly in distinguishing between firemen and other operators of emergency vehicles

Liability of Street Superintendent

The rule in regard to the personal liability of a municipal officer, charged with the care of streets, for an injury caused by the negligent performance of an act during his duties seems to be the same as that in regard to other municipal officers; i.e., he is personally liable for injuries caused by his negligence when the duty imposed upon him is ministerial and not judicial or discretionary. 40 A.L.R. 1361. Thus in *Moynihan* v. *Todd* (1905) 188 Mass. 301, 108 Am. St. Rep. 473, 74 N. E. 367, it was held that a superintendent of streets was liable for injuries caused by the blasting of rock if he was personally negligent.

McQuillin Quoted

With reference to the responsibility of an officer of a municipality for the wrongful or negligent acts of subordinates, McQuillin in his work on municipal corporations, Vol. 2 (2d Ed.) page 408, has this to say:

"The doctrine of 'respondeat superior' has no application between a public officer and his subordinates who are likewise in the public service, unless the officer does direct the tortious act to be done or cooperates therein. However, liability is frequently grounded on the identity of the officer and his deputy or subordinate or the unrestricted right of control over him, and the officer may become liable, as where he directs or authorizes the wrong or fails to require his subordinates to follow prescribed regulations, or sometimes if he neglects to superintend properly the discharge of his duties or knowlingly shall employ or retain unfit or improper persons. Thus, if a municipal officer employs a clerk and gives him the power to handle funds of the city, or pay out money without the warrant of the mayor, such officer is liable for the clerk's misconduct. *Union Bank & Trust Co.* v. *Los Angeles Co.*, 11 Calif. (2d) 675, 81 Pac. (2d) 919. It was held that a sheriff was liable in punitive damages for unlawful assault of his deputy upon a minor if the sheriff ratified the acts of the deputy, which is a jury question. *Brabham* v. *State of Miss.* 96 Fed. (2d) 210. The general rule is that where officers are clothed with discretionary, judicial, or quasi-judicial powers, they are not liable unless they are guilty of gross or willful misconduct or negligence in the performance of their duty."

From the foregoing, it can be seen that almost any city official can, under some circumstances, be held liable for the negligent acts of himself and his subordinates. Therefore, it behooves every city official to use care, the ordinary care required by the law, in the selection of his subordinates, in the performance of his duties, and in the supervision of the work of those who are under his control.

* See page 88 of this issue.

XUM

"Trolley Coaches IDEAL To Reduce Traffic Congestion"

—says C. W. Gifford
one of the nation's foremost transit operators

"To reduce street congestion effectively, public-transit vehicles must be fast, big, reliable, maneuverable, and popular with the public," says C. W. Gifford, president of the Des Moines Railway. "That's why, without question, the trolley coach is the ideal vehicle."

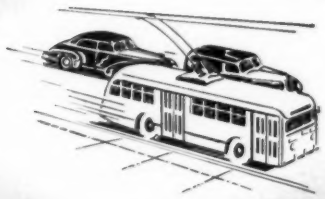
Yes, trolley coaches meet the specifications a transit vehicle must have to reduce traffic congestion. Because they start and stop fast enough to keep pace with automobiles in city traffic, trolley coaches move ahead in any traffic lane. With its high schedule speed and large capacity, the average 44-passenger trolley coach can carry a load equivalent to that of 25 automobiles (based on the average automobile load of 1.75 passengers).

In every city where trolley coaches operate and public opinion has been polled, these smooth, clean, quiet electrics have won by a landslide. In Des Moines, for example, surveys, which cover eight years, indicate that trolley coaches are most popular.

Every public-transit rider uses one-seventh as much street space as an automobile passenger. That's why a higher transit riding habit in your city will greatly lessen traffic congestion and the parking problem. Why not make sure that more people will use public carriers regularly by encouraging your local-transit officials to modernize their service with the vehicles preferred by millions! *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

FAST STOP AND GO . . .

Loads traffic

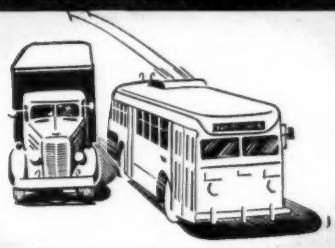


LARGE CARRYING CAPACITY . . .

Equals 25 autos

HIGH SCHEDULE SPEED . . .

GREAT MANEUVERABILITY . . .



Gets around obstacles

PROVED POPULARITY . . .

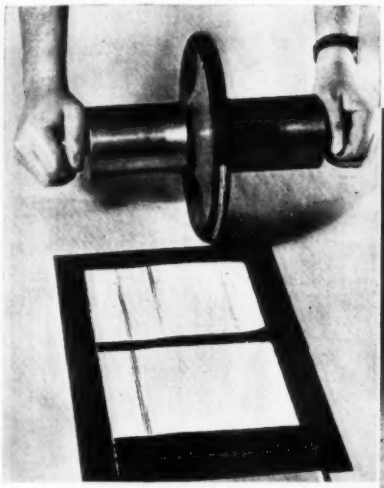
. . . in every vote taken

See LIFESTREAM OF THE CITY, the movie that shows how to minimize traffic congestion. Your G-E representative will arrange for a showing.

GENERAL ELECTRIC

107-191

Traffic Paint Performance



Left: The New Jersey Zinc Co. traffic paint drying time tester. Below and right: The abrasion tester used in the laboratory and on traffic lines.

—Some Simple Tests for Important Properties.

ROAD-MARKING paints require a unique set of properties not possessed by any other type of paint. They must withstand brutal punishment from the wheels of buses, trucks, and cars, from the searing summer sun, drenching rains, and the ice and snow of winter. The performance of these paints is a tribute not only to the ingenuity and skill of the paint research chemists, but also to the effective cooperation of highway engineers. These groups developed modern traffic paints through years of painstaking research and investigation in laboratories and on highways. Through the proper combinations of pigments and vehicles, they have built into traffic paints improved durability together with high day and night visibility — which give greater highway safety.

Resistance to Wear. A simple mechanical device which measures the relative abrasion resistance of traffic paints was developed in 1941 by the research laboratories of The New Jersey Zinc Co. It consists of multiple rubber disk wheels set at an angle of 10° to an axle holding them. A movable pointed prong through the middle of the axle serves as the axis around which the apparatus rotates. Since the wheels are weighted (total 20 pounds) and are set at an angle to the line of motion, both a rotating and sliding action are obtained. The apparatus can be used both in the laboratory and on the road. In laboratory tests, the traffic paint is applied to a flat sheet of metal, then aged and conditioned to simulate a dry, wet or weathered exposure. An indentation for the pointed prong of the abrasion machine is made so that the rubber wheels will rotate in a circle. A layer of sand is spread on the test area, and the wheels are then rotated a standard number of times (usually 200). The sand is redistributed uniformly after each ten revolutions. The direction of rotation is reversed so that the total number of revolutions will be equally divided between a clockwise and a counter-clockwise motion. At the completion of the test, the paint is dusted off and graded for abrasion resistance. Usually the test paint and a paint of established performance are applied to adjacent areas and abraded simultaneously.

Traffic paints abrade at different rates, depending upon road and weather conditions. Weathered films, for example, abrade more than those only a week old, and paints abrade faster on a wet road than a dry one. Such conditions can be simulated in the testing laboratory in order to evaluate traffic paints for different types of service. To feign wet road conditions, the laboratory-painted panel is wrapped in wet toweling for eighteen hours prior to testing for abrasion resistance. To simulate the effect of weathering, the painted panel is subjected to accelerated weathering; i.e., man-made weather consisting of exposure to alternate cycles of ultra-violet rays more intense than those of the sun, drenching water spray, and freezing cold.

Drying Time. Variations in temperature and the thickness of a paint film greatly affect its drying. Some traffic paints that dry in 30 minutes in summer may require several hours at temperatures between 35° and 40°F. A practical standard procedure for determining the drying time of such paints must, therefore, control those variables and also include the effect of a rolling automobile wheel. In a procedure developed by The New Jersey Zinc Co., the test paint is applied to a panel at a controlled thickness of .004 inches in

DUAL
Automatic Parking Meters set the pace *in Precision*

NO DETAIL is overlooked by Dual engineers in making sure that Duals set the pace in *precision* of operation—of design—of construction.

That's why these *quality-built* automatic parking meters are so dependable—so easy to install and operate—so low in maintenance cost.

Duals have many other advantages. They're tamper-proof and weather-proof. They're ruggedly built and attractively streamlined. *Their meter movement—the most vital part of any meter—is made by the makers of the famous Seth Thomas clocks.* They *earn* money long after they have paid for themselves—provide a long-lived source of revenue for other municipal services.

Find out how Duals can help solve your community's traffic-control problems—how they can bring profitable returns *in cash.* Write today for the informative free booklet DU-501, or call on our engineers for helpful service.

THE DUAL PARKING METER COMPANY

A subsidiary of The Union Metal Manufacturing Co.

MILFORD BUILDING • CANTON 2, OHIO

WHEN IT COMES TO CONTROLLING PARKING YOU CAN DO IT BETTER WITH DUALS

a room of standardized temperature and humidity. As the film dries, a rubber-tired toy wheel weighted to simulate an automobile wheel is rolled over it at intervals. When the wheel no longer picks up paint, the film is considered dry. This drying-time test has been adopted by the A.S.T.M.

Night Visibility. While an elaborate instrument has been developed that measures the visibility of a paint film under conditions which a driver meets when he approaches a traffic line 100 feet away, the cost prevents general use. Reliable data, however, can be obtained at low cost. The paint is applied to a glass panel and allowed to dry. This panel and a second panel of painted or frosted glass are held nearly flat at arms length and viewed at a low angle while a light beam comes over the observer's shoulder. The relative brightness of the test paint compared with the standard is a measure of relative night visibility. Tested blueprints are available.

During the war many raw materials needed for the manufacture of paints were not available or required high priorities. That situation is by no means cleared up at this time. However, paint research groups and highway engineers continue their investigations to develop better traffic paints utilizing the ever-expanding varieties of pigments, resins, oils, and thinners — creations of our chemical industry.

Can People Afford Traffic Accidents?

COMPARING a year of war with the first year of peace, Lansing, Michigan, found that injury and property damage had increased as follows:

19% in car occupant injuries
36% in pedestrian injuries
57% in deaths
73% in property damage

As a result of these findings, a study was conducted by the Lansing Safety Council and the National Conservation Bureau to discover how much traffic accidents cost the people of Lansing. The study was pursued along four lines: accident costs paid per person, direct man-hour losses from jobs, causes of accidents, and direct costs of accidents.

In the study of accident costs per person, medical figures showed that injuries generally were most severe to pedestrians, less severe to passengers, and least of all to drivers. Adding the accident figures of drivers, passengers, and pedestrians together showed that the average injured traffic accident victim lost $170 in salary through absence from his job; paid $92 for doctor and hospital bills, plus $26 for miscellaneous bills such as attorney fees, fines, and settlement of other parties' claims, and, if a car owner, had a $220 auto repair bill.

In the study of job-hours lost, indirect losses as well as direct absences of employes must be considered. The following would be among the causes:

(1) Persons who quit their jobs because of a traffic accident. Several such reports were received in this survey.

(2) Supervisor's extra work necessary when an employe is absent.

(3) Inefficient work of the accident victim after his return.

(4) Other employes' lost time—time taken to discuss accident, aid victim, etc. For instance, one man in Connecticut (in a recent similar study) was absent six days from his job to be near his wife and daughter in a hospital in another city, where they were recovering from traffic accident injuries.

(5) Past years' accumulated loss. A skilled worker killed or maimed five years ago represents a loss in available man-hours this year. The average time lost for the several participants in the accidents was found to be as follows:

Drivers not injured.... 2¼ days
Drivers injured ..... 17½ days
Passengers injured .... 32¼ days
Pedestrians injured.... 36 days

The final figures were costs per accidents of various types as summarized in the table shown here. Other communities can use these figures by multiplying annual accident tolls by the cost ratios found in this study. These cost figures are direct costs only. Indirect costs such as those already mentioned (for hiring and training replacement employes, loss of profit while injured employes were absent, reduced earning power of permanently maimed persons, etc.) would probably make this half-million dollar direct loss look like a midget compared with the giant of indirect (but nevertheless real) cost.

In the study on accident causes, 75% of the drivers, 85% of the passengers, and 67% of the pedestrians cited faulty driving as the major cause of the accident. Left and right turns are frequently associated with collisions between vehicles, and also with accidents involving pedestrians. "Foot slipped off brake" is cited a number of times as the cause of accidents.

TWELVE-MONTH TOTAL, ACTUAL COST OF REPORTED TRAFFIC ACCIDENTS
Lansing, Mich., August 1945 to July 1946, Inclusive

Classification of Cost	2,200 Property Damage Accidents	203 Car Occupant Injury Accidents	136 Pedestrian Injury Accidents	10 Fatal Accidents	Total
Salary Loss	$ 16,500	$28,560	$17,500	$ 5,500	$ 68,060
Medical Bills ..	....	14,020	25,400	11,160	50,580
Auto Repair ...	227,000	44,000	1,000	1,660	273,660
Other	9,650	8,680	3,700	....	22,030
Total	$253,150	$95,260	$47,600	$18,320	$414,330
Per Accident...	$115	470	350	1,830	....

Better Roads Are Safer

JUDGING by recent experience, the accident rate is headed for an all-time record, as a result of increased travel and high-speed driving, unless new pavements are designed to reduce the number of accidents.

Eliminating broken and slippery surfaces is one of the most effective ways to insure safer motoring. A high percentage of accidents results when skidding or breaks in the road throw cars out of control.

Wider pavements and bridges and better shoulders also will help to prevent accidents. A large proportion of existing roads and highways needs improvement in these respects.

It has been demonstrated also that there are fewer collisions when lanes of traffic flowing in opposite directions are separated physically, so as to minimize the danger of head-on collisions, and when pedestrians are excluded from high-speed highways.

The elimination of highway intersections and grade crossings invariably reduces the accident rate, as does removal of sharp turns and steep grades.

CLAUDE C. BLAIR, *President*
Paving Brick Institute

Brooklyn to expand its TROLLEY COACH SERVICE

Tentative plans call for 13 additional Trolley Coach lines

According to present plans, 13 of Brooklyn's existing rail lines will be changed over to trolley coach operation. This is part of a $37,000,000 transit modernization program which, among other improvements, includes the purchase of 435 trolley coaches, 356 PCC cars and 800 motor buses.

Orders have already been placed for 200 new trolley coaches and the contract let for the overhead construction of three of the proposed 13 lines. After these lines are converted, probably in July, 1948, tentative plans call for the changeover of the remaining 10 lines to be completed sometime in 1951.

Ever since they were originally placed in service on the Cortelyou Road line in 1930, trolley coaches have done a good job of transporting passengers in Brooklyn. They have proved to be dependable, easily maneuvered in heavy traffic and combine the mobility of motor buses with the load capacity and reserve power of street cars.

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MANSFIELD, OHIO

Canadian Ohio Brass Co., Ltd., Niagara Falls, Ontario

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Los Angeles Works To Solve Traffic Problem

THE plan of modernization and improvement of transit service and traffic relief for Los Angeles, Calif., is directed toward improved vehicles, better service and routing, reduced travel time, and general traffic relief, according to Fred L. Mowder, secretary-manager of the Los Angeles Traffic Association.

Outstanding features of the proposal include the introduction of a fleet of modern trackless trolleys to replace a number of old wooden-bodied street cars, which will be scrapped. These new, silent, rubber-tired vehicles will be routed through the central business district in order to conform with the proposed one-way traffic control and dovetail with the program of freeway construction now in progress. The routing of various lines to conform with this change will result in new service to some areas and in substantial time savings to several thousand persons per day.

Benefits will result for other users of the highways through the elimination of street-car turning movements at some thirty important street intersections in the city. The automobile-carrying capacity of several of the narrow streets will be increased through the elimination of street-car tracks and the substitution of curb-loading vehicles on those thoroughfares.

In order to carry out its modernization program at the earliest date possible and be in a position to conform to public authorities' plans for improved traffic control, the Los Angeles Transit Lines placed orders several months ago for 120 new trackless trolleys and forty new street cars.

How Transit Can Shrink Traffic

COUNTING the necessary headway in a traffic lane, the automobile will take about twenty-five times as much street space per passenger as will a large public carrier vehicle. The answer is obvious. Congestion comes from the number of vehicles moved rather than from the number of passengers moved. The average automobile carries 1.7 passengers. A modern trolley coach or large bus will carry forty-four seated passengers.

City planners, municipal traffic authorities, and public officials generally have come to realize that cities cannot continue to grow and prosper without carefully planned, adequate public transportation.

CHARLES GUERNSEY, *Vice President, Marmon-Harrington Company, Indianapolis, Ind.*

Transit Presidents' Conference Committee street car. Notice standee windows.

The Post-War Street Car

By S. B. COOPER
Transportation Engineer, Industry Engineering Department, Westinghouse Electric Corporation East Pittsburgh, Pa.

ALTHOUGH many existing car lines in smaller cities, or secondary and crosstown lines in the larger cities, will be changed over to trolley coach or motor coach operation, the modern street car still remains a most efficient vehicle for heavy trunk-route service in large cities. Attempting to handle large numbers of people in private automobiles or in small-capacity transit vehicles is neither efficient nor economical. City planners now recognize the importance of mass transportation in our cities. Along with plans for freeways and superhighways, consideration is being given to the needs of the great number of people who must continue to depend on public transit.

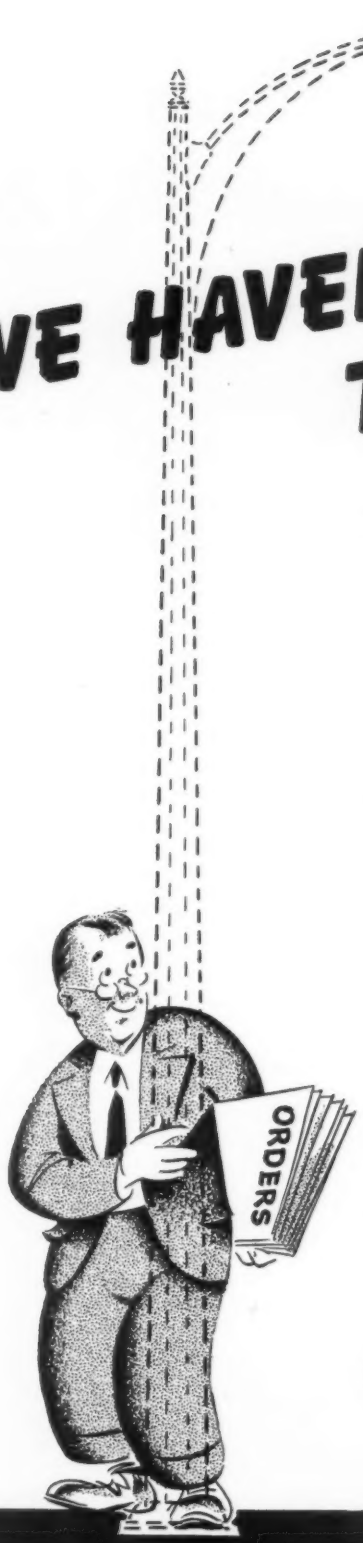
The Transit Presidents' Conference Committee car is the result of a cooperative research program which was begun in 1929 by the Electric Railway Presidents' Conference Committee. The first of the fast, quiet cars was ordered early in 1935, and from then until 1944 about 2,500 were placed in service on sixteen properties in the United States and Canada. It was recognized that, following the war, there would be an increased demand for equipment to replace older rolling stock. A program was started to establish the objectives of further developments and improvements for the post-war street car.

Body changes were made to improve passenger comfort by making seat spacing and post spacing the same. This made it possible to move the seat cushions closer to the side wall of the car and obtain a greater aisle width. Standee windows have been adopted as a standard feature, making it possible for the standing passengers to see out without stooping. Important improvements also have been made in braking, in the motor, and in the truck.

Equipment already has been developed for multiple-unit operation, first for the Pacific Electric Railway in Los Angeles, and later for the Boston Elevated. Fifty cars recently placed in service in Cleveland are all equipped for multiple operation. Couplers can be added whenever the contemplated plans for rapid transit are completed. The city of Shaker Heights has just ordered twenty-five T.P.C.C. cars to run from Cleveland Terminal over private right of way to Shaker Heights.

The 2,869 cars in service and 1,481 on order are the best testimonial to the success of this modern street car.

WE HAVEN'T EVEN ONE TO HIDE BEHIND!



THERE'S no denying it—there just aren't enough Union Metal street lighting standards to meet the tremendous demand—even though we're producing all we can.

We're in much the same position most manufacturers find themselves these days. Materials are in short supply and there's a huge backlog of orders that accumulated during the war. Topping it off—progressive cities all over the country want better street lighting as soon as they can get it.

We think this big demand is a wonderful thing for the country—even though it embarrasses us. It proves that thousands of municipal officials recognize the value of good street lighting, and want to bring its benefits to their people. We compliment them, and we really appreciate their patience.

We *can* offer this ray of hope: the production picture is improving, and it may change for the better sooner than expected. We're keeping our fingers crossed.

In the meantime, communities that want Union Metal lighting standards will find them well worth waiting for—because these standards are economical, efficient, attractive and durable. You can be sure that they will come up to the *high-quality* standards you have grown to expect from Union Metal. The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

Largest Producers of Street Lighting Standards

Capital Lighting for a Capital City

By ERASTUS CORNING, 2nd
Mayor of Albany, N. Y.

ALBANY, the capital of New York State, will be an example for other municipalities in safety and beauty when our present plans for modern and adequate street lighting are realized.

Our city, like many others in the United States, is experiencing the problem of increased local and through traffic, with an attendant increase in traffic accidents, injuries, and fatalities.

Much has been done by the departments of public safety and public works in facilitating the movement of traffic and the reduction of daytime accidents. Consideration is now being given to the improvement of the night traffic situation, and we are turning to modern and adequate street lighting for the desired results.

A start in making the night traffic conditions better through improved street lighting was made before the war, and new systems were installed on Clinton, Central, and Washington Avenues, North Broadway, and the business section of South Pearl Street. The advent of World War II forced the abandonment of more extensive plans until last year, when the study and planning were resumed.

The first two steps in the post-war modernization of Albany's streets were completed recently. The initial step was the lighting of lower State Street (the main business street) and a section of Eagle Street with forty-seven Twin-light ornamental standards equipped with two General Electric Form 79-AD luminaires with 15,000-lumen incandescent lamps for each standard.

We departed from the previous and conventional practice of mounting the twin luminaires perpendicular to the curb and have placed the new luminaires parallel to the curb. The day and night appearance is quite acceptable, as is the substantial increase in light utilization.

Night pictures before and after Albany's State Street relighted. Daytime view shows the old and new units. The latter's twin lights, placed parallel to the curb, are a departure from conventional right-angular mountings.

Because of its extensive width, State Street presented a lighting problem. At the foot of the street, which extends up-grade to New York's Capitol Building, the width is 68 feet. The thoroughfare gradually widens, reaching a width of 104 feet at Eagle Street. Aside from presenting a lighting problem, however, the expansiveness of the street is a contributing factor to its beauty. Adding to the appearance of State Street is the recent removal of all overhead trolley wires and steel poles used for the trolley system, which has been replaced by buses.

The files of the Albany Chamber of Commerce contain a plan for the city drawn by Martin Brunner, well-known city planner. Mr. Brunner visualizes State Street as one of the most beautiful in the world, with the State Capitol and its park at one end and the Plaza at the other. The new lighting system is designed to enhance these features.

This new lighting provides 2.5 foot-candles of light on the street, five times the amount furnished by the previous system. The mounting height of the new luminaires is 30 feet from the pavement to the light center, in contrast to an average of 20 feet in the old installation. Spacing of the new standards varies from 75 to 88 feet, located in opposite arrangement, virtually the same as the old system.

The second part of this plan covered the illumination of fourteen blocks of upper State Street and Washington Avenue, which are main traffic streets extending past the Capitol and New York State Office Building (Alfred E. Smith Building). These thoroughfares also include business sections, and high-intensity lighting is necessary. In all but five of the fourteen blocks, 10,000-lumen incandescent lamps are employed. In the remainder, 6,000-lumen lamps are installed.

Upper State Street is 36 feet wide and the luminaires are staggered 150 feet apart. Washington Avenue is a 50-foot street, and the new luminaires are staggered 100 feet apart. In both instances, the mounting height to light center is approximately 28 feet.

The centennial of Thomas A. Edison's birth coincided with the initial turning on of this latter part of the present post-war street lighting plan. As these new lights were turned on February 11, it was interesting to reflect upon the great developments in the lighting field since Edison's first car-

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Low-voltage series receptacle for series circuits of 2,500 volts or less, either 6.6 or 20 amperes; straight series or on secondary of isolating transformers.

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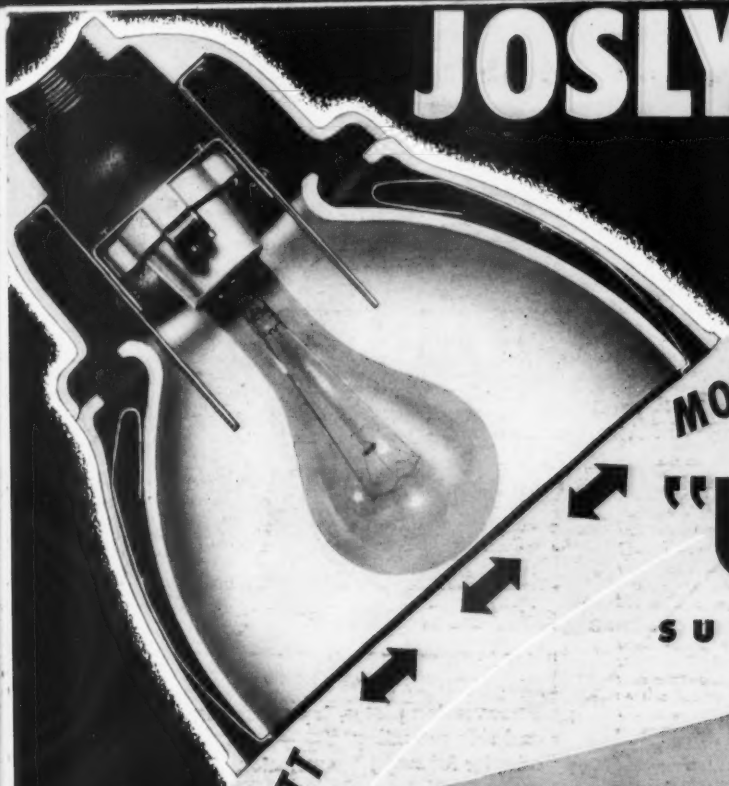

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bon filament lamp was perfected on October 21, 1879. His first lamp burned for the then phenomenal period of forty hours. The lamps in Albany's modern street lighting luminaires are given a 3,000-hour life rating, an average gain of forty-three hours a year for sixty-eight years.

Modern glassware, scientifically designed reflectors, more powerful lamps, combined with the latest Illuminating Engineering Society recommendations of correct luminaire location and mounting heights, will assure Albany of the best and most efficient traffic safety and business street lighting. We are aware that such modern and adequate street lighting is an economic necessity. As the home of the state government and the focal point in travel from one end of the state to the other, Albany cannot afford to have anything but adequate and modern street lighting. On the basis of our first two post-war street lighting projects, we will be guided in the future in our program to make Albany a better, safer, and more attractive place in which to live, work, and visit.

The next phase of this development, already authorized, is the relighting of Broadway from the Parker Dunn Memorial Bridge, crossing from Rensselaer, to Livingston Avenue, where the previous relighting on Broadway started, providing this thoroughfare with complete modern traffic safety lighting for its full extent within the city.

Mercury Vapor Lights Big Intersection

AT THE big street intersection in South Bend, Ind., at Lincoln Way East, Jefferson and Carroll Streets, eleven General Electric luminaires with 16,000-lumen mercury vapor lamps have been installed to replace fourteen upright incandescent luminaires with 6,000-lumen lamps.

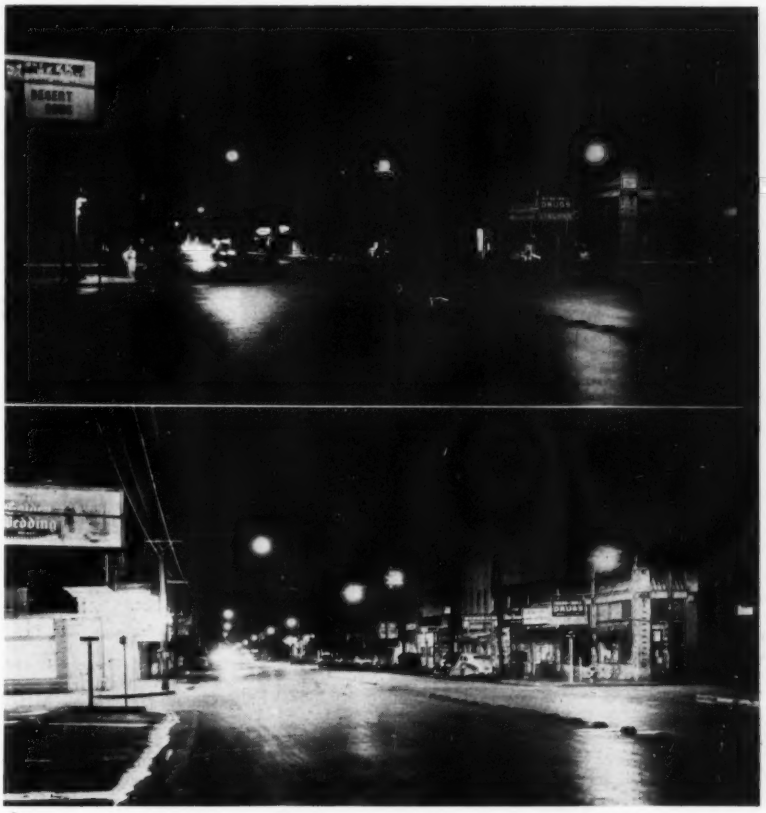
The new pendant mountings are approximately 25 feet, compared with a 13-foot mounting for the old upright. Illumination tests show that the new installations, made in September 1945, provide 4⅓ times more illumination than the former system.

The cost of operation was paid by the city, while the installation cost was borne by the utility company because of the experimental nature of the project.

Insufficient time has elapsed to give any definite data on accident experience. The main purpose was to test mercury vapor lighting and to illuminate channelization islands installed at intersections.

R. S. ANDRYSIAK
City Civil Engineer
South Bend, Ind.

Good Visibility—Aid to Traffic Safety



Above: A thoroughfare in Dallas, Texas, before street lighting modernization. Open refractor-type luminaires with 4,000-lumen lamps were mounted on 14-foot mast arms at a height of 18 feet and at average spacing of 248 feet. Below: After installation of traffic safety lighting. Enclosed asymmetric luminaires with 6,000-lumen lamps are mounted on 14-foot mast arms at a height of 22 feet and at an average spacing of 124 feet.

J. W. MONK
Supervisor of Public Utilities
City of Dallas, Texas

THE basic reason for traffic safety lighting is to provide safety for the vehicle driver and pedestrian alike by insuring visibility after dark.

The city of Dallas has in the past maintained adequate street lighting for intersections, as well as downtown white ways, and has a definitely planned policy for future traffic safety lighting.

The above photographs of a 3,727-foot section of Ross Avenue illustrate the difference between ordinary and modern traffic safety lighting. This installation was made in April 1945 on a trial basis.

Here are the records for April 30, 1944, to April 30, 1945—before safety lighting—and for the one-year period, April 30, 1945, to April 30, 1946—after installation of safety lighting.

	Night		Day	
	Before	After	Before	After
Property Damage...	15	5	18	13
Vehicle	3	3	0	1
Pedestrian	1	1	1	2

Night accidents had been reduced 52.6% and night property damage accidents were reduced 66.6%. In the same period day accidents fell 15.8% and day property damage accidents fell 27%. So, taking the percentage reductions of day accidents as characteristic of a general downward trend of accidents, the following adjusted percentage of accident reduction attributable to safety lighting is obtained:

Night accidents reduced 36.8%

Night property damage accidents reduced 39.6%

Because of public acceptance and approval by city traffic authorities and the Citizen's Traffic Commission, this modern installation will serve as a pattern for relighting.

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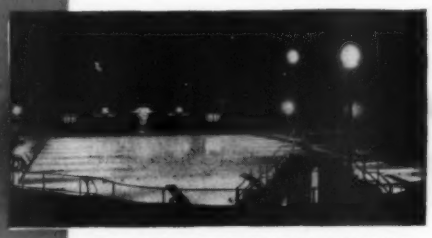
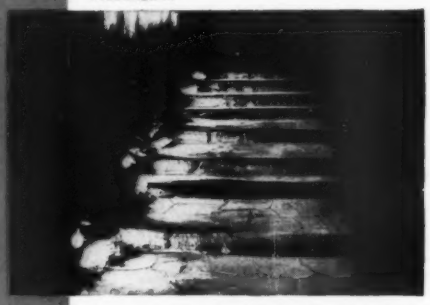


Swimming pool lighted with Type SPS Underwater Floodlights and Type GCP Lantern Floodlights.



Stone stairway lighted with Type FS Lighting Fixture.

Home of the Bostom Braves . . . . lighted by Crouse-Hinds Type MUA Alumalux Floodlight

Baseball field lighted with Type MUA Alumalux Floodlight.

Decorative Lighting. There are many opportunities to make parks more attractive by using Crouse-Hinds floodlights to project either white or colored light on fountains, gardens, statuary, towers or other architectural details. Fluorescent paint and "black-light" can be used for the selective lighting of any desired objects causing them to glow as if they were lighted from within.

Utility can be combined with decoration by using Crouse-Hinds Type VCD Roadway Lighting Fixture, Type GCP Lantern Floodlight or Type FS Floor Lighting Fixture.

Swimming Pools. Crouse-Hinds Type RPS is an up-to-the-minute underwater floodlight that combines the installation and space economy of a wet niche unit with the dry niche advantages of easy access to the lamp, lamp socket, and wire. Type SPS Underwater Floodlight is for use where passageways or manholes are available. For the overhead lighting of outdoor swimming pools; Type GCP Ornamental Lantern Floodlight, Type MUA Alumalux Floodlight, and Type ADE Heavy Duty Floodlight.

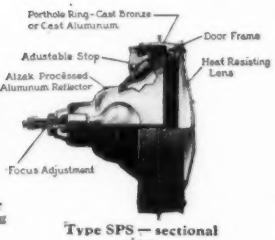
Sports Lighting. The Crouse-Hinds Company can furnish layouts for the efficient floodlighting of all types of playing fields, including football, baseball and softball fields, playgrounds and tennis courts. Crouse-Hinds Type MUA Alumalux Floodlight is widely used for sports lighting.

General Floodlighting. Concessions, rides and auto parking lots are most efficiently lighted by the use of floodlights. There are many other areas in every park where it will cost much less to project light to a considerable distance with Crouse-Hinds long range floodlights than to run wires and install local lighting.

Type FS for lighting steps, floors, walks, and gardens.

Type MDB Light Duty Floodlight with removeable steel stake for temporary ground mounting.

Type RPS Underwater Floodlight for mounting in the side wall of swimming pools.



Type SPS — sectional view.

Type VCD Roadway Lighting Fixture for viaducts, bridges or tunnels. Mounted low, it gives no glare to pedestrians or motorists.

Type ADE Heavy Duty Floodlight gives perfect light control and low maintenance cost.

Type MUA Alumalux Floodlight provides adequate light at minimum first cost.

Type GCP, an ornamental lantern by day; a powerful floodlight at night.

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Sign Bridges to Guide Traffic

New Jersey state highway department designs large direction sign for visibility

By **SPENCER MILLER, JR.**
State Highway Commissioner
Trenton, New Jersey

OVERSIZE road-direction letters 15 inches high and direction-arrows 4 feet long, outlined in white neon lights, will give New Jersey another traffic aid. Several of the massive units have been assembled and will be erected as fast as materials are available.

The new design was recommended by State Highway Engineer Charles M. Noble after a personal survey of trunk roads. (He also has urged that larger, improved route-markers be placed on all state arteries to give advance warning of road junctions. They will be styled to be read very rapidly, in order to enable drivers to get into their proper lanes safely.)

The Newark-Elizabeth link of Route 25, "the world's heaviest traveled highway," was selected as the site for the first installation. Three miles of the highway is being modernized and widened from four lanes to eight and divided into four 32-foot roadways —one each for going and coming "thru" or "express" traffic, flanked by two for local travel. Center islands and reflecting curbs will guide vehicles in the one-way separated channels.

Since the three miles of highway represents an investment of more than $3,000,000 for safety and for continuous traffic flow at legal speed, it needs clear, prominent directional signs. The set-up will help to prevent the crack-ups that occur frequently now at junction points. It is estimated that the neon lights will be visible at a distance of 750 feet.

One innovation will be "sign bridges". These structures will be made of overhead steel beams across the roadway. They will show, directly over the lanes, route numbers and municipal names. Five bridges will be used. One will be near North Avenue, Elizabeth, and the others will be adjacent to Newark Airport. The longest bridge span will be 80 feet: the others will vary in accordance with the width of roadway and the importance of the road junction. The largest of the signs will be 24 feet wide. In all there will be about seventy road markers on the three-mile link, of which twenty-seven will be illuminated.

Numerous tests disclosed that neon tubes last longer when used continuously. Turning them on and off, with the resultant oxidation, causes them to fail sooner, especially at the terminals. For this reason they will remain lighted during the day.

Originality, combined with scientific ideas, also has been applied to obtain the best results in night highway illumination. Spacing was decided upon scientifically to obtain the greatest illumination from the 360 incandescent electric light units to be placed along the three miles.

The Highway Department's Electrical Division, under the direction of James L. Hays, designed and supervised the electrical work. Location tests were made by William B. Widmann, electrical field assistant.

The designing of the signs was under the direction of Ralph L. Fisher, Engineer of Design, under the general supervision of H. W. Giffin, Engineer of Surveys and Plans. The steel sign bridges and foundations were designed by O. H. Amann, consulting engineer of Boonton, N. J., and New York. Concrete foundations were placed by the Maintenance Division of the Highway Department, with Earl L. Storer in charge.

An English View of Traffic Safety Lighting

IN "Street Lighting from the Motorists' Point of View," read at a conference of the Association of Public Lighting Engineers held in London, Edward Fryer pointed out discrepancies and needs he had observed in street lighting as required for safer driving. They are presented below in order of importance, as arranged by Mr. Fryer.

(1) Lack of uniformity seemed the first characteristic. With bewildering rapidity, the traveler passed from one type of lighting to another, of varying color, intensity, and height, each giving a different effect. At one time the motorist felt secure in driving at normal speed without headlights, and then, within a few hundred yards, he had to switch them on again. This caused confusion and reduced confidence in driving.

(2) The motorist expected a standard of street lighting which would enable him to drive at normal road speeds at night without the use of headlamps with the same confidence he had during the day. This meant the elimination of shadows and dazzle.

(3) The illumination of background was sometimes neglected. The surface of the roadway might be illuminated to the exclusion of foot-paths, flanking buildings, road junctions, and so on. A motorist would not feel safe because at any time pedestrians, children, dogs, or vehicles might suddenly emerge into his path.

(4) The elimination of distracting lights was also important. The purpose of an advertisement light or display light was to attract attention. It must not be allowed to attract to the point of distraction.

(5) All type of traffic signs should be illuminated. No traffic sign should be erected on the highway today unless essential, and if essential, then its requirement should not end with the daylight.

(6) Disorder was found in the lighting of road obstructions. Central and permanent obstructions were well lighted, but there was great lack of uniformity in the lighting of temporary obstructions. Red lights only should be used for these.

Public Interest in Lighting

COMMUNITIES can no longer afford the economy of old-fashioned lighting on main and traffic streets. For example: for just an added 65 cents per capita per year, Greensburg, Pa., became one of the most effectively lighted towns in the United States. Some such cost, in almost any community, assures fewer crimes and fewer traffic deaths and injuries.

In a recent nation-wide survey, the Street and Traffic Safety Lighting Bureau submitted a questionnaire to police officials in cities with populations of 10,000 and over. Ninety-six per cent of those replying stated that poor street lighting is a definite contributing factor in the high night traffic accident rate. Some 71.5% admitted that their cities were inadequately lighted.

The country seems to be becoming aware of the relation between adequate street lighting and public welfare. Newspapers are launching crusades for the modernization of lighting; national magazines and specialized publications are featuring the subject; chambers of commerce, women's clubs, and men's business organizations are discussing it.

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Why install signs that are effective only during daylight hours when least needed?

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Recent City Manager Appointments

A. E. AXTELL, former city clerk, has been made city manager of Kenosha, Wis.

BOYD A. BENNETT, manager of Charlottesville, Va., 1922-25; Bluefield, W. Va., 1925-28, and MCIE recently president of Northeastern Water and Electric Corporation, has been appointed city manager of Clearwater, Fla.

R. G. BOWDRY, manager of Stamford, Texas, 1933-45, has been reappointed as manager of that city, following the resignation of Richard Giles.

W. A. CLARKE has succeeded W. B. PITTS as manager of Tappahannock, Va.

DAVID D. CLERK has been appointed first city manager of Chicoutimi, Quebec.

H. L. DOOLEY has replaced FRED ROARK as city manager of Gainesville, Ga.

ARTHUR L. DOW, town manager of Rumford, Me., from 1938-41, and more recently a colonel in the United States Army, has been made first city manager of Paris, Tenn.

RICHARD E. EDMONDSON, General Superintendent and Assistant City Engineer, has been made city manager of Montrose, Colo.

ROBERT A. FINLAYSON, manager of Montrose, Colo., from 1936-40, has been appointed city manager of Oregon City, Ore.

WINSTON W. HILL, former city attorney, became city manager of Washington Court House, Ohio, on March 1.

J. L. HORNER, water works superintendent of Henderson, Texas, has been appointed city manager of Pittsburg, Texas.

LOUIS D. KELSEY, city manager of Milwaukie, Ore., since 1945, has been appointed first city manager of Fairbanks, Alaska.

OREN L. KING, city manager of Montrose, Colo., since 1942, has become first manager of Pendleton, Ore.

LEO LUPIEN has been appointed first city manager of Louiseville, Quebec.

H. L. MCCULLOUGH, city engineer for the past ten years, has been appointed city manager of Murfreesboro, Tenn., to succeed S. S. Cox, who resigned after twenty years of manager service in that city.

KENT MATHEWSON, Chief of the Personnel Management Division of the Richmond, Va., Veterans Administration Branch Office, has been appointed manager of Asheboro, N. C., to replace WALTER E. YOW.

R. B. MESERVE, former manager of Marianna, Fla., 1943-44 and of Fernandina, Fla., 1941-43, has been appointed city manager of Melbourne, Fla., replacing CHARLES R. STICKEL.

CARL T. NORRIS has succeeded C. C. MILLER as manager of Woodward, Okla.

EVAN EMERY PETERSON of the University of Denver has been appointed city manager of Coos Bay, Ore.

WILLIAM A. ONION, JR. has replaced ROBERT HOLLAND as town manager of Castleton, Vt.

A. E. ROLISON, city manager of Redding, Calif., 1918-26; Santa Barbara, 1926-27; Redwood City, 1929-35; San Mateo County, 1937-38, and more recently with the War Assets Administration, has been appointed first manager of Avalon, Calif.

GEORGE C. SHANNON, manager of Lynwood, Calif., since February 1, 1945, will be first city manager of Oxnard, Calif.

T. EDWARD TEMPLE, city manager of Hopewell, Va., since November 1944, has been appointed first city manager of Spartanburg, S. C., effective April 15.

H. JACK TURNER has succeeded W. L. BROGDEN as city manager of Buford, Ga.

ALLEN WILCOX, town manager of Castleton, Vt., 1944-46, and of Cavendish, Vt., since April, 1946, has become town manager of Norway, Me.

MILLS P. WALTER became city manager of Bryan, Texas, on April 1.

R. T. WRIGHT has succeeded G. M. PARKERSON as manager of Eastman, Ga.

B. F. BERKAW, city engineer of Fredericksburg, Va., has been appointed city manager of Clifton Forge, Va.

CLARENCE E. RIDLEY
Executive Director
International City Managers' Association
Chicago, Ill.

New York's Five-Alarm

(*Continued from page* 89)

system, for the use of land pumping engines. There was also the high-pressure system which protects the city south of 34th Street on the West Side and of Houston Street on the East Side. In this area alarms sound also in the pumping stations, so that by the time the apparatus reaches a fire the water pressure has been pumped to 125 pounds. A telegraph signal from the Chief brings higher pressure. For this warehouse fire the pressure was boosted to 200 pounds.

The picture on the cover and the one on this page show particularly fine examples of laying streams for the deepest penetration into a building. This being an outside operation, with fixed lines, each engine company was capable of handling two or three lines. Each of the two fire boats is equivalent in pumping capacity and number of lines to ten pumping engines. The boat can supply at least ten 3½-inch lead lines to the land and connect them to three-way gates to which three 2½-inch lines with 1¼-inch nozzles can be attached. Thus these three-way gates serve as additional hydrants.

The fire was considered under control at 10:30 a. m. Outside operations, however, were continued until 2 p. m., as it was not possible to determine the stability of the structure for inside operations.

Added anxiety was caused by the proximity of loaded warehouses and two gasoline stations 15 feet from the burning building. The valves of the gas stations were closed to prevent entry of water. The fire, however, was confined to the one structure.

City Adopts New Charter and Seeks City Manager

BY adopting a new charter in an election on February 4, University City, Mo., became on April 1 the first municipality in the St. Louis area to have a council-manager form of government. It is also the first city in Missouri to take advantage of the "home rule" provisions of the new state constitution.

The St. Louis Governmental Research Institute played an important role in drafting and providing information about the charter. Staff members attended all the meetings of the Charter Commission and prepared much of the material used in its work.

Applications for the position of city manager should be addressed to Arthur J. Schopp, City Clerk, 6801 Delmar Blvd., University City, Mo.

The Municipal Bond Market

Some sales of new issues reported in recent issues of *The Bond Buyer*.

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$ 200,000	Lynn, Mass., Street and Sidewalk	1	1-5 Ser.	.892
40,000	Milton, Mass., Sewer Construction, 1947.	1	1-5 Ser.	.803
180,000	Medford, Mass., Street Construction	1.25	1-10 Ser.	1.13
20,000	South Glens Falls, N. Y., Water	1.40	1-10 Ser.	1.375
13,000	Louden, Tenn., Electric System Revenue Refunding	1.50	4 Avg.	1.272
1,600,000	Beloit, Wis., School Building	1.50	11 Avg.	1.424
450,000	Altoona, Pa., Refunding and Improvement	1.50	2-11 Ser.	1.453
22,000	Point Pleasant, N. J., Capital Improvement, Series A	1.75	2.66 Avg	1.715
1,290,000	Hamilton, O., City Sch. Dist.	1.75	12.5 Ser.	1.73
220,000	Alliance, Neb., Sch. Dist.	1.75	8.25 Avg.	1.458
6,000	St. Louis Park, Minn., Street Improvement Orders	1.90	1-3 Ser.	1.826
14,000	Fuquay Springs, N. C., Water and Sewer	2	9 Avg.	1.792
4,000	Millersport, O., Fire Equipment	2	3.25 Avg.	1.17
210,000	Greenville, N. C., Electric Light	2	9-22 Ser.	2.185
5,000	Fairport, O., Fire Apparatus	2	3.66 Avg.	1.95

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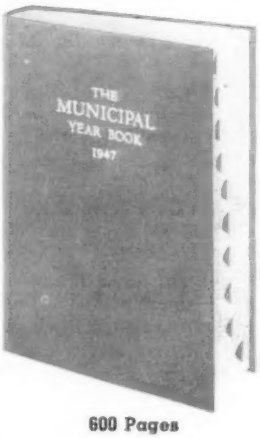

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Cities Using Parking Meters.

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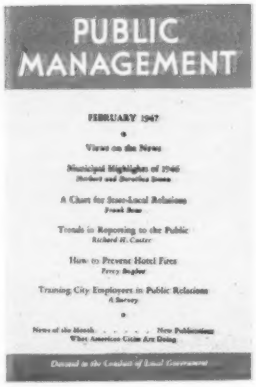

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New Publications

Municipal and Civic

Water Purification

LABORATORY CONTROL OF WATER PURIFICATION. —*By Charles R. Cox, Chief, Bureau of Water Supply, New York State Department of Health. Published by Case-Sheppard-Mann Publishing Corp., 24 W. 40 St., New York 18, N. Y.* 1946. 386 *pp.* $4.00.

A simplified presentation of laboratory control covering water purification, designed to meet the needs of the man who has received little or no special training in this work. It incorporates into book form the material that had been presented by the author in a series of articles for *Water Works Engineering*, a magazine published by this same company.

Unincorporated Area Survey

RESIDENTIAL DEVELOPMENT IN THE UNINCORPORATED AREAS OF MILWAUKEE COUNTY, WISCONSIN—*Milwaukee County Regional Planning Department, Milwaukee, Wis.* 1946. 29 *pp.*

This is an excellent report on the results of a questionnaire survey conducted among rural-area dwellers in cooperation with the Milwaukee County schools. It tells why people moved to the unincorporated areas, why they selected their present locations, what size lot they would prefer, and the public utility and commercial services they would like to be near.

Recreational Facilities Analyzed

RECREATION IN CAMBRIDGE.—*City Planning Board, City Hall Annex, 57 Inman St., Cambridge 39, Mass.* 1946. *Photos. Graphs.* 56 *pp.*

This planning board has not only presented an excellent analysis of Cambridge's recreational facilities, but it has done a good job of public relations.

Addressed to the citizen, the report shows—in photographs, maps, and text—exactly what facilities are provided now, what should be provided, and why.

The photographs are part of the public relations job in that they are pictures of people who actually live and play in Cambridge.

A Guide to Mutual Housing

MUTUAL HOUSING—*National Housing Agency. Superintendent of Documents, Washington 25, D. C.* 1946. 55 *pp.* 15 *cents.*

This guide was prepared in response to a nation-wide demand by veterans groups for information and advice on cooperative and mutual housing enterprises. It is designed to provide an outline of the possible solutions to the many problems which these groups will encounter in organizing mutual housing projects. It explains how special federal aids available to veterans can be best adapted to this type of venture.

The pamphlet is well-organized, written in clear, non-technical language, and includes a chart with thirty-three steps for organizing a mutual housing association and constructing and financing the project.

Rental Housing

RENTAL HOUSING, A COMMUNITY PROGRAM FOR MAYORS' EMERGENCY HOUSING COMMITTEES—*Office of the Housing Expediter, Washington 25, D. C.* 1947. 33 *pp.*

Outlining a program to promote construction of multi-unit rental housing, the booklet is directed towards Mayors' Emergency Housing Committees. Concrete suggestions are given for avoiding costly delays and fumbling when housing construction moves forward this spring.

Australian Tax Study

SOCIAL EFFECTS OF MUNICIPAL RATING, A STUDY CONDUCTED IN FOOTSCRAY, AUSTRALIA—*By the Land Values Research Group with the cooperation of the Footscray City Council. Available from L. F. Bawden, 52 Guildford Road, Surrey Hills, E. 10, Australia.* 1946. 60 *pp.* 90 *cents.*

Before describing the contents of the pamphlet, it should be explained that the term "municipal rating" is equivalent to American usage of "municipal taxation." The aim of the study was to find what the economic effects would be, if the system based on the annual rental value used in Footscray was changed to a system based on the rating of land values.

The research revealed many injustices in the present rating system which is comparable to the one used in this country, in that it taxes most heavily those owners and industries who improve their properties so that they are assets to the municipality. The report shows, for example, that speculators and owners of poorly improved properties are, in effect, subsidized because of the present system. Even where municipal services remain substantially the same, the well-developed properties are penalized.

The conclusions, based on an imposing array of statistics and factual data, indicate strongly the advantages to the municipal economy of changing to a site-value rating system.

New Social Work Yearbook

SOCIAL WORK YEARBOOK, 1947—*Russell H. Kurtz, editor. The Russell Sage Foundation, 130 E. 22 St., New York 10, N. Y.* 714 *pp.* $3.50.

Ninth in the series of yearbook editions issued since 1929, this volume is a careful compendium and description of organized activities in social work and related fields.

Part One consists of a group of seventy-nine signed articles written by authorities in fields related to social work. Part Two includes directories of national governmental and voluntary agencies whose activities pertain to social work, and a directory of Canadian agencies.

Each of the signed articles contains a list of selected references. In their entirety, these lists constitute one of the most up-to-date, extensive, social-work bibliographies currently published. The volume should be a valuable addition to any governmental administrator's reference shelf.

Builders of New York

THEY BUILDED BETTER THAN THEY KNEW—*By Julius Henry Cohen. Julian Messner, Inc., 8 W. 40 St., New York 18, N. Y.* 1946. 376 *pp.* $3.75.

The book is a rare account of behind-the-scenes incidents in New York's civic and political life, based on the author's fifty years of experience in public activities. It is a series of portraits of men and women whom Mr. Cohen has known and worked with, and who have contributed to the building of New York City.

A section of the book is devoted to the story of how the Port of New York Authority was created and the people who helped to create it. The author himself served as general counsel of the Authority from its inception in 1921 until his return to private practice in 1942. Here also are accounts of New York housing legislation development and of proposals which have never been carried out, such as that for a St. Lawrence Power Authority.

The stories of accomplishments are told in an engaging and entertaining fashion, and should serve as a tonic for those pessimistic about social and economic programs.

City Economic Forecasting

FORECASTING A CITY'S FUTURE, SACRAMENTO, CALIFORNIA—*By Van Beuren Stanbery and Miriam Roher. California State Reconstruction and Reemployment Commission, Sacramento 14, Calif.* 1946. 64 *pp.*

Using Sacramento as an example, this study explores nation-wide economic trends and their pressures to show that outside influences have an important effect on the community's economic well-being.

The publication points out that the people of every community unconsciously create a set of economic patterns in their daily business of living and making a living. These patterns include population, employment, earnings, production, consumption, expenditures, and savings. The directions and rates at which these patterns are changing in a particular city provide clues to what the future holds.

The thesis of the study is that by identifying the larger economic trends and the community's economic underpinnings, a city can study their effects, take them into account in planning, and make them operate to advantage.

Municipal Licensing

A MANUAL ON MUNICIPAL LICENSE TAXES IN ALABAMA—*By Ed E. Reid, executive director, Alabama League of Municipalities. 14 South Hull St., Montgomery, Ala. Information Report No. 48.* 1947. *Mimeo.* 43 *pp.*

LICENSE TAXES ON AMUSEMENTS IN VIRGINIA MUNICIPALITIES, BASIS AND AMOUNT OF LICENSE PER YEAR—*League of Virginia Municipalities, 902 Travelers Building, Richmond 19, Va. Report No. 298. Mimeo.* 20 *pp.* 50 *cents.*

The above publications are guides for municipal officials who deal with municipal license tax problems. The Alabama report is a carefully prepared description of the legal and administrative aspects of municipal licensing. The Virginia report contains a summary of representative city license tax codes with reference to amusements of all kinds.

Both reports represent services which leagues of municipalities in other states should make available, if they have not done so already.

Freeways and Transit

URBAN FREEWAYS—*Prepared by Committee on Urban Transportation, American Institute of Planners. Published by The American Transit Association, 292 Madison Avenue, New York, 17, N. Y.* 1947. 38 *pp.*

Featuring photographs and illustrations which suggest specific methods for improving urban transportation facilities, this well-designed booklet consists of a group of previously published statements on the subject of modern express highways and their use for mass transit. The matter of freeway transfer stations and the provision of bus turnouts and loading points on expressways is given considerable attention in the last section of the report, which is an original contribution of the committee.

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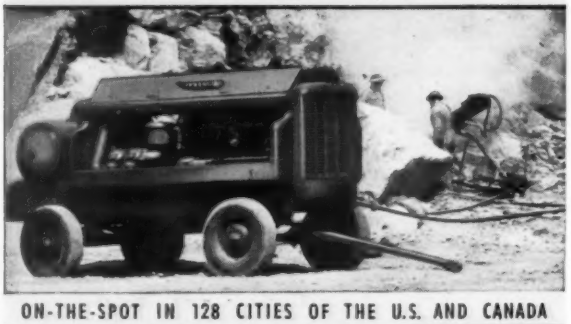

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British Planning

A Bibliography of Housing and Town and Country Planning in Britain—*British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. November 1946. 28 pp.*

A list of books, pamphlets, documents and periodicals in the libraries of British Information Services, New York, and its branches at Chicago, San Francisco and Washington.

Films From Britain—*British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. 1946. 6 pp.*

A listing of British official films which deal with social planning. Each film shows an aspect of Britain's post-war plans for the reconstruction and replanning of the country. The films are available at nominal rates from British Information Service offices in nine cities throughout the country.

Final New Towns Report

Final Report of the New Towns Committee—*Ministry of Town and Country Planning. Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. 83 pp. 45 cents.*

An extended discussion of the problems involved in founding the social structure of new towns and fostering their corporate lives. The report is divided into three main sections, dealing with principles in planning, factors affecting the preparation of the plan, and execution of the plan.

Retirement Funds

Retirement of Municipal Employees—*Research Department, Kansas Legislative Council. Publication No. 144. 1946. 42 pp.*

A major part of this excellent report deals with the basic problems involved in the retirement of municipal employes. It contains summaries of the retirement plans in the twenty-three states which have enacted laws providing funds covering local government employes. It also describes a state-wide retirement plan for municipal employes in Kansas.

Zoning Problem

Abandoned and Discontinued Non-Conforming Uses in Zoning Law and Administration.—*By John W. Reps. Springfield Chamber of Commerce, Springfield, Mo. 1946. 17 pp. Mimeo. 15 cents.*

A scholarly presentation of the legal factors involved, including statute and ordinance provisions and court decisions, and administrative methods and problems in a narrowly defined segment of zoning.

The paper is a valuable contribution to the field, and should be a part of every library dealing with municipal legal problems and zoning.

Housing Symposium

Housing—*E. R. Latty, Special Editor. Law and Contemporary Problems, Quarterly, Winter, 1947. School of Law, Duke University, Duke Station, Durham, N. C. 208 pp. $1.00.*

A symposium consisting of some particularly searching articles on the housing problem is included in this issue of *Law and Contemporary Problems*. Not only are legal aspects presented but also economic, sociological, political, and technological phases of our current housing shortage are explored.

The contributors include such authorities as Robert L. Davison, Miles L. Colean, Shirley Adelson Siegel, George N. Thompson, Philip H. Hill, and Robinson Newcomb.

City Tax Popularizations

City Income Taxes and City Sales Taxes—*Tax Institute, Inc., 150 Nassau St., New York 7, N. Y. 1947. 5 cents each for single issues. $1.00 per 100.*

Two popular releases of leaflets which briefly summarize major city developments in the income tax and sales tax field.

Waterfront Plans

A Suggested Program For The Redevelopment of the Weirs, N. H.—*Prepared by the New Hampshire State Planning and Development Commission. 1947. 32 pp.*

This report should be of interest to small communities having waterfront locations. It should be of special interest to those communities which are anxious to make improvements to stimulate public recreational and resort activity.

Food Inspection

Meat and Restaurant Inspection, A Case Study of the Problems in the Association of Valley Cities—*By Dr. Ernest Howard Campbell. Bureau of Public Administration, University of Washington, Seattle, in cooperation with Association of Washington Cities. Report No. 70. 1947. 18 pp.*

Model ordinances for municipal and county meat and restaurant inspection are included in this report. It also contains suggested measures for supplementing state inspection services.

State Aid Problems

Problems of State Aids in Minnesota—*The Minnesota Institute of Governmental Research, Inc., 702-704 Empire Bank Building, Saint Paul 1, Minn. 1947. 43 pp.*

A thorough, impartial analysis of the state-aid question in Minnesota, which contains much information of general value and guidance about this vital subject. The report includes sections on a comparison of state aids in Minnesota with aids in neighboring states, and one on liabilities and problems created by grants-in-aid.

For Children in Trouble

Children in the Community: The St. Paul Experiment in Child Welfare—*U. S. Children's Bureau, Social Security Administration, Federal Security Agency, Washington 25, D. C. 1947. 182 pp. Single copies free upon request.*

Describing a unique project and experiment designed to study ways of discovering and getting treatment to children who were having behavior difficulties, this pamphlet has many suggestions for correcting juvenile delinquency tendencies at an early age. It prescribes methods of developing an integrated program of service to children in a community, which will draw upon many of its existing organizations and public and private agencies.

Hospital Planning

Tuberculosis Hospital Planning And Construction—*By J. Bruno Basil. National Tuberculosis Association, 1790 Broadway, New York 19, N. Y. 1946. 81 pp. $1.00.*

In writing this volume, the author worked under the direction of a special committee of the American Trudeau Society, which obtained opinions and experiences of leading sanatorium administrators in every part of the country. Mr. Basil also made numerous on-the-spot surveys to check on present-day requirements and ways and means of achieving them.

The monograph itself is a companion volume to a set of standard plans for a 200-bed tuberculosis hospital published by the National Tuberculosis Association. It discusses the basic factors involved, department by department, in the architectural planning for essential hospital services.

Zoning and Parking

Zoning To Require Off-Street Parking Facilities For New Buildings—*New York State Bureau of Municipal Information, Albany, N. Y. Report No. 2908. 1947. 6 pp. Mimeo. $1.00.*

A summary of some provisions in the zoning ordinances of New York State municipalities to require that builders provide off-street parking facilities.

Better Civic Education Booklet

For Us The Living, An Approach To Civic Education—*By John J. Mahoney, Harper and Bros., 49 E. 33 St., New York 16, N. Y. 1945. 344 pp. $2.50.*

Attacking the roots of the problem of improving our environment, Mr. Mahoney's searching analysis of our failures in teaching the responsibilities of citizenship aids in pointing the way toward an educational program for democracy.

Why is it that there is seemingly so little general citizen interest in municipal improvement and betterment? Why do so few people turn out at the polls to vote on vital issues of the day? Why has it been so difficult to attract outstanding leadership to top political posts?

Mr. Mahoney gives his answers in the book, explaining his conception of democracy and how practically to go about achieving it through our school systems. He stresses the necessity of making the American people more politically intelligent so as to arouse their interest and participation in the workings of local government. The book is stimulating and displays a great knowledge of both scholarly and practical affairs.

Teaching City Planning

City Planning As Studied in the San Francisco Public Schools—*The San Francisco Planning and Housing Association, 1095 Market Street, San Francisco 3, Calif. 1946. Mimeo. 4 pp.*

City Planning To Meet The Problems of San Francisco—*City Planning Commission, Room 252, City Hall, San Francisco 2, Calif. 1946. Mimeo. 9 pp.*

These two reports represent an excellent approach toward promoting an understanding of city planning through the school system. The first publication is a report on what was done to sensitize children to city problems, from the kindergarten to the sixth grades of the San Francisco schools from 1944 to 1946.

The second publication is a syllabus containing a series of seven informal talks which were presented to the local teachers' organization by the staff of the city planning commission. These talks explained planning and its functions and purposes in a community, and emphasized the importance of education in the future of city planning.

TVA Annual Report

Unified Valley Development, TVA Reports, 1946.—*Available upon request from the Information Office, Tennessee Valley Authority, Knoxville, Tenn. 82 pp.*

For a reinforcement of one's belief in democracy and what it is capable of accomplishing, a reading of this concise annual report of the TVA is highly recommended. Here is a story of achievement so complete and remarkable as to stir the imagination. The reader interested in social progress and the application of technology to human welfare will be left with a warm glow of encouragement.

A Freeway Plan

An East-West Freeway for Essex County, New Jersey.—*Joint Council of Municipal Planning Boards, Essex County, N. J. 1947. 16 pp.*

This well-prepared, concise brochure directs attention to the Chinese Wall of traffic congestion in the northern New Jersey metropolitan area, and emphasizes the necessity for planning freeways through urban areas.

City and State Planning

Jersey Plans—*Bureau of Planning, Department of Economic Development, 520 East State St., Trenton 7, N. J. Vol. 1, No. 1. January 1947. 15 pp.*

The first issue of this handy, bi-monthly publication contains articles on planning and municipal finance, modern planning of state highway systems, and state and local planning news.

KARPARK

KEEPS ON THE JOB

In lighthouse or parking meter the essential quality is DEPENDABILITY. Built to hold its own when the powers of sea and sky run wild the lighthouse faithfully throws its guiding beam during blackest nights and thundering storms. With its rugged construction the KARPARK keeps steadily on the job in spite of heat, cold, rain and snow. Motorists count on its accuracy and like the ease and certainty of its automatic operation. Officers find its easily seen signals a quick and reliable guide in checking violations. Officials appreciate the constant revenue it produces with such little call for servicing. Write for all the facts about this dependable performer.

KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK CO.

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KARPARK *Automatics*

KARPARK CORPORATION, CINCINNATI 6, OHIO

AUTOMATIC VOTING MACHINES

Were Used by One Out of Three Voters At the Last Presidential Election

During the past 50 years upwards of 300,000,000 voters have used the "mechanical ballot"

Automatic voting machines are now used by more than 3,500 cities and towns from coast to coast

If your community is interested in realizing the advantages offered through the use of voting machines —write

AUTOMATIC VOTING MACHINE CORPORATION

JAMESTOWN 55, NEW YORK

"Builders of Voting Machines Since 1898"

Shore Erosion Report

REPORT TO THE LEGISLATURE OF THE STATE OF NEW YORK.—*By the Joint Legislative Committee Studying the Problem of Checking Erosion Along the Atlantic and North Shores of Long Island.* 1947. 16 *pp.*

The report describes in detail and shows the location on a map of twenty-five beach protection projects which have been placed in the New York State program since 1945. The committee recommends that New York State legislation be amended further to provide that 50% of the maintenance costs of dune restoration be paid for by the state and 50% by local municipalities.

Up-to-Date Tax Data

STATE-COLLECTED MUNICIPALLY SHARED TAXES—*American Municipal Association,* 1313 *E. 60 St., Chicago 37, Ill.* 1946. 37 *pp. Mimeo.* $1.50.

This report was prepared to be used during state legislative sessions in 1947, as an aid in the drafting of bills and the seeking of legislation by local governments for additional shares of certain state-collected taxes.

It consists of two tables: one presenting on a state-by-state basis both municipal and total yields from such taxes, while the other provides a brief description, or identification, of each such tax, and a statement of the basis for distribution to municipalities.

Community Revitalization

WOODLAWN: A STUDY IN COMMUNITY CONSERVATION—*Prepared by the Chicago Plan Commission in collaboration with the Woodlawn Planning Committee.* 1946. 76 *pp.*

This well-written report is lavishly illustrated and makes extensive use of color. It uses the community of Woodlawn in Chicago to analyze the problems common to most of the middle-aged Chicago residential areas and to propose a plan of action for community revitalization and improvement.

Slum Clearance

REHOUSING URBAN SLUM AREAS.—*Institute of Social Order,* 3742 *West Pine Blvd., St. Louis 8, Mo.* 1946. 36 *pp.* 20 *cents.*

Although this pamphlet contains brief statements by recognized authorities in the fields of planning and housing, the significance lies in its endorsements of a national program of slum clearance and housing given by prominent officials of the Catholic Church.

The twenty statements and comments on the necessity for rebuilding urban slum areas are all intelligent and concise. They present a number of arguments which should be excellent ammunition in support of housing.

Housing Program for All

A HOUSING PROGRAM FOR AMERICA—*By Charles Abrams. League for Industrial Democracy,* 112 *E. 19 St., New York 3, N. Y.* 1947. 32 *pp.* 25 *cents.*

A comprehensive, well-expressed monograph on ways and means of providing, through public, cooperative, and private enterprise, housing for all the people of the country. In part, the pamphlet is an elaboration of Mr. Abrams' three articles in *The Nation,* as well as being a clear and concise summary of his recent book, *The Future of Housing.*

Community Cooperation

HELP YOURSELF—*Department of Public Instruction, Lansing, Mich. Bulletin No.* 410. 1947. 28 *pp.*

This booklet is the story of several small Michigan communities which, through cooperative effort, are finding the way to better living. It describes many fields of activity in which people have worked together to enrich and invigorate community life. All the stories are inspiring and should provide many ideas for action to other small municipalities in the country.

Full Employment

ECONOMIC POLICY AND FULL EMPLOYMENT—*By Alvin H. Hansen. Whittlesey House, McGraw-Hill Book Company, Inc.,* 330 *W. 42 St., New York 18, N. Y.* 340 *pp.* $4.00.

Although the country is now in a period of substantially full employment, with serious inflationary trends, Professor Hansen focusses attention throughout the book on the long-range financial and economic planning. Such planning must be carried out if the country's stability is to be secured, and if high productivity is to be maintained.

The author analyzes employment programs recently announced in England, Canada, Australia, Sweden, and the United States. He also makes clear the necessity for integration of public and private investment.

Light and Power Rates

EQUITABLE LIGHT AND POWER RATES.—*By W. R. Tingle, C. P. A. Charlotte, N. C.* 56 *pp.* $1.00.

A small, paperbound booklet presenting a method of making rate charges for electric service which utilizes neither the "block" nor the "step" system. The author calls for a sliding-rate schedule with a change for each kw hr, based on a formula that he presents. He recommends the method chiefly for domestic and small electric-power consumers. Mr. Tingle points out that they remove irregularities and consequent inequities in the present rate system.

The author's method probably could be applied to water-rate making also, although, he has not considered it in this study. The booklet contains twenty applications of his formula for various electricity generating situations.

Metropolitan Planning

METROPOLITAN PLANNING ORGANIZATIONS—*Frederick P. Clark. Regional Plan Association,* 205 *East 42 St., New York, N. Y.* 1947. 32 *pp. Mimeo.* $1.00.

This is a description of the program and accomplishments of fifteen metropolitan planning organizations, aimed at the furtherance of interest and cooperation among such groups.

Mr. Clark indicates in his introductory statement that although metropolitan planning is still in its infancy, the reports from these metropolitan organizations demonstrate that new and useful mechanisms for coordinated municipal action are being built.

A Regional Planning Commission Report

ANNUAL REPORT STUDY AND RECOMMENDATIONS OF THE LOWER PENINSULA PLANNING COMMISSION. 4500 *Washington Ave., Newport News, Va.* 1946. 54 *pp.*

This first report of the Lower Peninsula Planning Commission of Virginia is of special interest because the Commission's scope of authority and activity covers six separate and distinct political subdivisions, including three counties and their unincorporated communities, and three incorporated cities and towns. Many of the report's recommendations cover waterfront development projects of various kinds.

Pollution Abatement Study

PROGRESS REPORT OF THE SPECIAL COMMITTEE ON POLLUTION ABATEMENT OF THE JOINT LEGISLATIVE COMMITTEE ON INTERSTATE COOPERATION.—*Harold C. Ostertag, chairman. Attica, N. Y.* 1946. *Maps. Tables. Mimeo.* 74 *pp.*

The broad implications of water pollution and its specific effects on the health, happiness, and prosperity of New York State's residents are covered thoroughly in this report. The study also suggests ways in which the destructive inroads of water pollution can be erased from one of the most valuable natural resources. If these suggestions are heeded, they may help to correct a condition which has been progressively encroaching on the state's waters for a number of generations.

Parking Bibliography

BIBLIOGRAPHY ON AUTOMOBILE PARKING IN THE UNITED STATES. *Compiled in the Libraries of the Federal Works Agency. Issued by Public Roads Administration, Washington, D. C.* 1946. 47 *pp.*

This useful bibliography contains 1035 references on automobile parking, most of which have been published in the United States during the last fifteen years.

Planning and Housing Reports

DENVER, COLO.—The Housing Authority of the City and County of Denver. 1944. Denver Housing Authority, 1449 Navajo St. Illus. Maps. 15 pp.

MEMPHIS, TENN.—Housing and People. 1946. Memphis Housing Authority, 264 No. Lauderdale St. Illus. 32 pp.

MONTCLAIR, N. J.—A Program of Town Development. 1946. Submitted by The Montclair Development Board. Tables. Plates. 77 pp.

RUTHERFORD, N. J.—Rutherford Plans at the Mid-Century. By John Taylor Boyd, Jr. Rutherford Planning Board, Municipal Building. Maps. 32 pp.

SAINT LOUIS, MO.—Annual Report of the City Plan Commission. 1946. City Plan Commission, 342 Civil Court House. Tables. Maps. Mimeo. 55 pp.

SAN DIEGO, CALIF.—A Plan for La Jolla. 1946. Prepared by Glenn A. Rick, planning director and Charles W. Eliot, planning consultant. San Diego City Planning Commission. Illus. 43 pp.

SEATTLE, WASH.—Report on Development of Industrial Cities in Duwamish-Green River Valley. 1946. City Planning Commission, 503 County-City Bldg. Maps. Mimeo. 36 pp.

Other Reports Received

GREENWICH, CONN.—The Significance of Politics in Local Government. By Roger S. Baldwin. Paper presented at a meeting of the Greenwich Rotary Club and other Service clubs. 1947. 23 pp.

MASON CITY, IOWA—Annual Report, 1945-1946. Mayor H. E. Bruce. Illus. Charts. 25 pp.

NASHVILLE, TENN.—Planning for Postwar Tourists in the Tennessee Valley. By Howard K. Menhinick, director, Department of Regional Studies, Tennessee Valley Authority. Reprinted from the *Tennessee Conservationist* by the Department of Conservation, Nashville. 11 pp.

NEW YORK, N. Y.—Minor Regional Airports for the New Jersey-New York-Connecticut Metropolitan Area. A publication of theRegional Plan Association, 205 East 42 St. Maps. Tables. 16 pp.

PALO ALTO, CALIF.—Annual Report. 1946. Mayor J. B. Blois. Charts. 125 pp.

PHILADELPHIA, PA.—Off-Street Parking Report, Central Business District. 1946. Philadelphia Committee for the Relief of Traffic Congestion, 785 City Hall. Charts. Maps. Mimeo. 8 pp.

QUEBEC, CANADA.—List of the Municipal Corporations of the Province of Quebec, 1946-1947. Bureau of Statistics, Department of Trade and Commerce. 91 pp. 25 cents.

SPRINGFIELD, MASS.—Here Is the Story! Springfield's Finances in Color. Springfield's Taxpayers' Association, Inc., 25 Harrison Ave. Chart. 4 pp.

WASHINGTON, D. C.—An Analysis of General State Enabling Legislation Dealing with Automobile Parking Facilities. Reported by David R. Levin. 1947. Highway Research Board, Division of Engineering and Industrial Research, National Research Council. 87 pp.—Lightweight Aggregates for Concrete. A Survey. 1946. Office of the Housing Expediter. Tables. Maps. 23 pp.—Fifth Annual Report of the Interstate Commission on the Potomac River Basin. 1945-1946. 520 Transportation Bldg. Illus. Maps. 23 pp.—Report on Plan Preparation of State and Local Public Works. 1946. Federal Works Agency, Bureau of Community Facilities. Charts. 75 pp.

BYPASS PROJECT WITH ZONED EQUIPMENT

"Caterpillar" builds the units you need to zone equipment for lowest costs on earth

1 Track-type tractors for "push"-distance earthmoving.

2 Track-type tractors for loading and pulling scrapers on medium hauls.

3 Wheel-type tractors for high-speed long hauls. —plus motor graders for finishing work.

WITH traffic congestion setting a terrific pace, the need for bypass arteries is becoming greater and greater — not only in metropolitan centers but around many lesser communities and converging points. The way to get such projects built at lowest costs is with *matched equipment zoned to the job* — whether done by contractor or by the county or municipality itself.

Illustrations show a case-example (Los Angeles). Here one of America's largest contractors assigned a brigade of equipment that included two sizes of "Caterpillar" Diesel Tractors, a "Caterpillar" Diesel No. 12 Motor Grader — with scrapers, bulldozers and tampers to fit their power and controls.

Other important "accessories" you don't see — but probably know about — are proved "Caterpillar" quality, dependability and operating economy . . . *plus* a dealer service that is always helpful with equipment recommendations — and thoroughly capable in keeping all your earthmoving units in tip-top working condition.

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ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

—for lowest costs on earth

News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

Improved Septic Tank Cleaner Serves Areas Beyond Sewer Systems

The new Gorman-Rupp O.S.C. unit in operation. Two lines of hose have been placed in the cistern. A four-inch suction line is carrying the flow into the pump and a three-inch discharge line is jetting it back into the cistern. The entire contents are agitated, placing all solids in suspension.

More sanitary and efficient methods of cleaning septic tanks are expected since the announcement by the Gorman-Rupp Co. of an Odorless Sanitary Cleaner. Heretofore, the public living beyond city sewer limits has depended on operators using makeshift equipment to clean septic tanks and vaults periodically. Open receivers served by hand-action diaphragm pumps, and even hand shoveling, have been common practices.

"Now such obviously unsanitary methods are no longer necessary," states J. C. Gorman, president of Gorman-Rupp, Mansfield, Ohio. "The new unit has been engineered for the particular requirements of the sanitary service field. Being completely enclosed with an 1100-gallon steel tank, served by a new Gorman-Rupp self-priming centrifugal sewage pump, the unit is the modern answer to a problem common to every community.

"It is significant that the Board of Health in Franklin County (Columbus) Ohio passed a resolution in May 1946 requiring septic tank, cesspool, and toilet cleaners to be licensed and use approved equipment. Such equipment must be sanitary, water-proof, and fly-proof and inspected and approved by the board of health. This indicates the general need and thinking of public health officials on this important subject," Mr. Gorman said.

Cleaning a septic tank with an O. S. C. unit is a sanitary, fast, odorless operation, as casual as any other household service. The unit mounts on any standard truck chassis of 158 to 161 inches in length. The O. S. C. operator simply backs his truck to a point near the opened septic tank. The fluid in the septic tank is utilized by drawing it into the pump and jetting it back into the septic tank to agitate the entire contents of the septic tank to hold solids in suspension. Then, by changing position of the pump discharge line valve, the contents of the septic tank are quickly pumped into the truck tank.

Operators using test models in the field report 500-gallon septic tanks cleaned regularly in fifteen minutes and 1,000-gallon tanks in twenty minutes. A 25,000-gallon septic tank at the Richland County (Ohio) Home was cleaned thoroughly in ten hours. By old-style methods, this job formerly required as much as two weeks. An O. S. C. unit cleaned three feet of raw sewage from the engine room of the Mansfield, Ohio, sewage plant in three hours' time, after the fire department and two old-style sewage cleaners had failed. An equipment failure had caused the back-up in the equipment.

This O. S. C. unit also has many other uses. It can be used for street finishing, race track sprinkling, emergency fire-fighting, de-watering flooded basements, or hauling water for concrete construction work, to mention a few.

Features of the O.S.C. unit include control which acts positively to stop pumping action before the tank overflows. Two-position and three-position valves in the discharge and suction lines regulate the various flow circuits in the units operation. The tank hatch is large enough for entry to clean or paint the tank interior. The catwalk on each side of the tank serves as a hose and tool rack. All operational controls and service points, including those on pump and engine, are placed at the rear of the unit within arm's length of the operator.

The new sewage pump on the O.S.C. unit is of rugged construction and features accessibility. It is a self-priming, centrifugal pump, made in Gorman-Rupp's patented design, that features simplicity of construction without valves, parts or orifices. It has a two-vane, trash-type impeller that will pass solids of a maximum dimension of two inches. The pump operates without a suction strainer; a simple, sturdy guard on the suction hose end prevents fouling against the septic tank bottom. Access is gained to impeller and pump interior by removing the end plate. This is done by simply loosening the clamp.

The pump is driven by a 20-hp, 4-cylinder, Wisconsin air-cooled gasoline engine.

Plant Moved to Linden

The Liquid Conditioning Corp., manufacturers of Liquonex water treatment materials and of Liquon processes and equipment for conditioning water and other liquids, has moved its main office and plant to 114 East Price St., Linden, N. J., to take care of its expanding business. The new centralized facilities of the company include enlarged departments for designing, testing, research, assembly, and warehousing.

Stoughton Succeeds Sawtelle

E. L. Stoughton, vice-president and general manager of the Worthington Mower Co., Stroudsburg, Pa., has assumed the duties of vice-president in charge of sales. This position was formerly held by E. R. Sawtelle. Assisting Mr. Stoughton are H. J. Pine, Jr., and Fred W. Staples.

THE HOUGH "HUFF" Payloader

PAYS OFF IN..... Speed! Capacity! Mobility!

Readily convertible for bulldozer service.

Long, high dumping reach for loading trucks.

The Model HL 1 yd. Payloader was designed from the tires up for fast, efficient excavation and loading. Built big and powerful, yet fast and maneuverable, to the job and on the job, the Model HL will turn out big yardage at a minimum of operating and maintenance expense.

Handles earth excavation, sand, gravel, aggregate, snow, or any other bulk material; pulls blade graders; loads spoil; used for street and highway construction or maintenance — on any job, a Payloader will cut costs sharply. Crane and Bulldozer attachments extend its use and versatility.

Hough Payloaders are the result of over 25 years of material handling engineering experience and are backed by a world wide distributor organization. Send today for new catalogs on the 1 yd. gasoline or Diesel Model HL; or the 10½ cu. ft. Model HA.

OVER 6500 NOW SERVING INDUSTRY THE WORLD OVER

THE FRANK G. HOUGH CO.

MATERIAL HANDLING EQUIPMENT SINCE 1920

710 SUNNYSIDE AVE. LIBERTYVILLE, ILL.

Aluminum Conductor Wire Overcomes Copper Shortage

The increased current loadings made possible through the application of heat-resisting rubber insulations, which can withstand higher temperatures of operation, have made the use of aluminum conductors in building wire as practicable as copper conductors. With the present acute copper shortage, they have proven a welcome substitute.

The National Electrical Code for many years has recognized and approved aluminum for electrical conductors, but until recently the higher current-carrying capacity of copper as compared with aluminum has militated against the general use of the latter for insulated wires and cables.

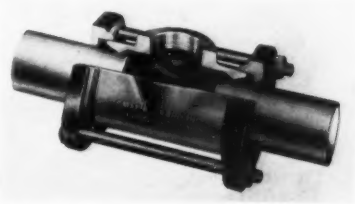
Previously, in the bulk of building wire, the copper conductors had been insulated with Type R rubber insulation rated at 60° C. Now, by protecting an aluminum conductor with Type RH heat-resisting insulation such as Performite (rated at 75° C), there is no need to increase the conducting area since the higher rating of the better grade of insulation fully compensates for the lower current-carrying capacity of aluminum (84% that of copper).

The Hazard Insulated Wire Works Division of The Okonite Co., Wilkes-Barre, Pa., now producing and distributing aluminum building wire, advises that there is little or no difference in price between the two types since the higher cost of the better grade Type RH rubber is offset by the lower cost of the aluminum. The company can supply aluminum building wire in all sizes to 1,000,000 CM, starting at size twelve.

City officials are invited to write to the company for its Bulletin H-407. This is a detailed booklet, describing the use of aluminum building wires, which includes charts of capacities, comparative weights, data on characteristics, and information on quick methods of determining voltage drop, conductor sizes, circuit length, and currents for both aluminum and copper.

New Coupling Simplifies Water Lateral Installation

The flexible tee coupling offers a greatly simplified and more economical way of connecting laterals to existing pipelines, according to the manufacturer, The Smith-Blair Co. of South San Francisco, Calif. The design of the coupling eliminates the need for field threading in the trench and does away with flexible couplings, nipples, tees, and unions, all of which usually complicate the connecting procedure needlessly.



The Smith-Blair flexible tee.

The flexible tee is now available for 2-inch cast iron, standard, and O. D. pipe and for other sizes to as small as 3/4 of an inch. In each, the outlet is the same nominal size as pipe run but has standard threads which permit the use of a bushing where needed.

The Smith-Blair Co. also manufactures a line of flexible reducing couplings up to 14 inches O. D. size for use with Transite, Century, C. I., and standard pipe. In this series there are over 8,000 available stock combinations of sizes for almost any pipe connection.

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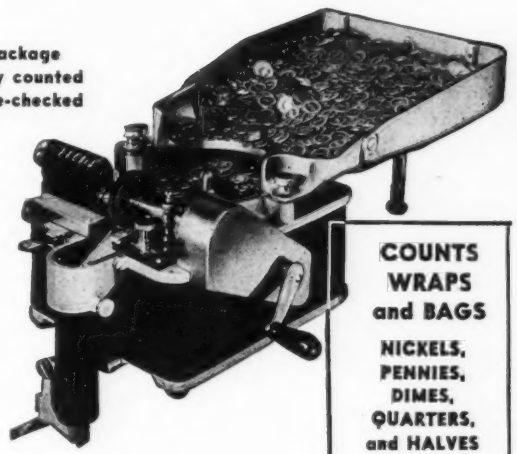
When counting PARKING METER money, can save valuable hours by using the portable, lightweight

DOWNEY-JOHNSON

COIN COUNTER

Every package accurately counted and double-checked



WEIGHT ONLY 17½ LBS.

COUNTS WRAPS and BAGS

NICKELS, PENNIES, DIMES, QUARTERS, and HALVES

A Practical Investment That Pays Dividends Daily

Make the counting of your parking meter collections easy with this *Downey-Johnson* Model 20 PH *Coin Counter* . . . It will count and wrap 175 rolls of coins per hour or bag 35,000 nickels per hour. This small machine saves time and labor—gains valuable hours for productive purposes—yet is priced within the reach of all. WRITE FOR CIRCULAR TODAY.

Universal Business Equipment Co.

537 So. Dearborn St. Chicago 5, Ill.

Haiss Snow Loader reduces removal costs 51%

in Ludington, Mich. (pop. 9,000)

Snows are heavy and frequent in Ludington.

Formerly, snow was removed by hand, but the City could not afford complete removal and the snow lay piled on important streets until spring. The City experimented with flushing the snow into the sewers with a fire hose, but this clogged the sewers.

In November 1945, Ludington solved its problem by buying a Haiss snow loader. For the first time, its streets could be quickly cleared for traffic—even in the heaviest snows.

James Cartier, Superintendent of Streets, takes pride in what the Haiss loader has done for Ludington and the money it has saved. "Last winter", he said, "we were all cleaned up with the loader and gone home, while nearby towns were still tied up in deep snow".

Below are Mr. Cartier's direct snow removal cost figures:

	Old Method 1944-45	Haiss Method 1945-46
Labor payroll	$4,200	$2,184
Gasoline and oil	3,077	1,634
All other expenses, repairs, etc.	1,423	459
	$8,700	$4,277

SAVING UNDER PREVIOUS YEAR: $4,423 (51 PER CENT).

Thus the direct saving for one year represents approximately 80 per cent of the loader's original cost, and Mr. Cartier's cost records show that the machine had paid for itself by March 1, 1947 (half-way through its second season).

The 18-man crew, (including six truck drivers) which formerly loaded snow by hand could handle only about 48 cubic yards per hour. The 9-man crew (including the same six truck drivers) now used with the Haiss snow loader has loaded as much as 600 cubic yards per hour.

Removing snow in Ludington with the Haiss machine is quick and efficient. The snow is first plowed into windrows in the center of the streets, usually overnight. Then the loader follows quickly, picks up the windrows, and keeps the trucks rolling to the snow dump. All streets are now kept passable throughout the winter.

On January 29, 1947, Ludington had a 12-inch snow storm, with three to seven-foot drifts. The Haiss snow loader was run for 16 consecutive hours. It immediately cleaned 14 downtown blocks representing about two miles of curb. In less than 24 hours, the downtown streets were clear. The rate of loading averaged 10 cubic yards per minute.

Write for full Information on the Haiss snow loader.

* * *

GEORGE HAISS MANUFACTURING CO.
140th St. and PARK AVE.—NEW YORK 51, N. Y.

Stockland Named Sales Promotion-Advertising Mgr.

Following the retirement of Francis M. Higgins as advertising manager of The Four Wheel Drive Auto Co., Clintonville, Wis., in order that he might devote all of his time to his work as president of the Wisconsin Central Airlines, the company has undertaken a rigorous program of consolidation of the sales promotion and advertising departments under the managership of M. O. Stockland, Jr.

M. O. Stockland, Jr.

Mr. Stockland has been connected with The Four Wheel Drive Auto Co. since 1922, when he and his brother took the FWD dealership in northern California and Nevada. In 1924, the company opened the San Francisco branch, at which time the dealership was closed.

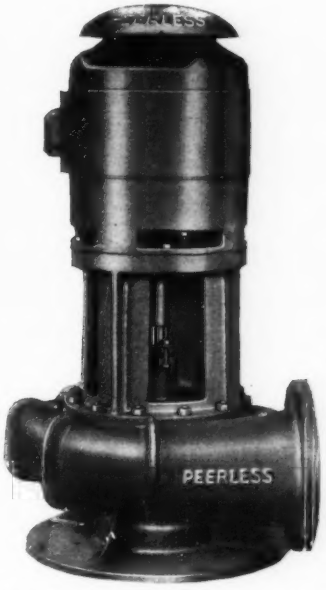
Under Mr. Stockland's managership, the branch opened the huge west coast FWD utility business, introducing the FWD truck to every major utility company in that area.

Vertical Centrifugal Pumps For General-Purpose Pumping

Designed for general pumping in a wide variety of industrial and municipal services, such as sump and drainage pumping, general water supply, and cooling tower service, the Peerless vertical centrifugal pumps include both close-coupled and submerged types. The latter type has either top or bottom suction.

Each of these types is adapted to all forms of power drive, including direct-connected, electric, right-angle gear, V or flat belt, and combinations of these forms.

Developing capacities of 200 to 5,000 gallons per minute, they will pump against heads of 20 to 100 feet.



The Peerless Vertical centrifugal pump, Type V. This is a close-coupled type with solid shaft motor and "moturbo" drive.

The company will send you upon request its recently issued bulletin illustrating all three types of pumps, including comprehensive parts diagrams. Write to the Peerless Pump Division, Food Machinery Corp., 301 West Avenue 26, Los Angeles 31, Calif.

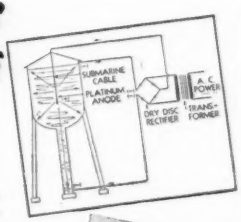
Gay, Teasley Appointed By Hercules Steel

The Hercules Steel Products Co., Galion, Ohio, has appointed Jack C. Gay to the position of sales engineer to handle sales and distributor problems in territory east of the Mississippi. Vernon R. Teasley has been named West Coast representative, according to an announcement made by Hursel L. Ekin, sales manager of Hercules Steel Products Co.

Mr. Gay has had twenty years of experience in the manufacture of hydraulic hoist and dump body equipment. For the past three years he has been in charge of sales engineering and sales organization with The Marion Metal Products Co., Marion, Ohio. Prior to that he was in charge of engineering for The Galion Allsteel Body Co., Galion, Ohio.

Mr. Teasley also has a background of over twenty years of experience, specializing in the truck equipment field, serving most recently as a distributor in Twin Falls, Idaho.

RUSTA RESTOR *REDUCES TANK MAINTENANCE*



Modern, Proved Cathodic Method Provides Lasting Protection Against Rusting—Eliminates Both the Loss of Service, and Cost, of Interior Painting.

Your tanks can get lasting protection against rusting with Rusta Restor. Approved and endorsed by national and state authorities, Rusta Restor reverses the electro-chemical process that causes rusting,—keeps the tank in a "neutralized" state that prevents rusting. Inexpensive to install, and cheap to operate. Send for full details today.

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A DIVISION OF
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Locate Underground Leaks

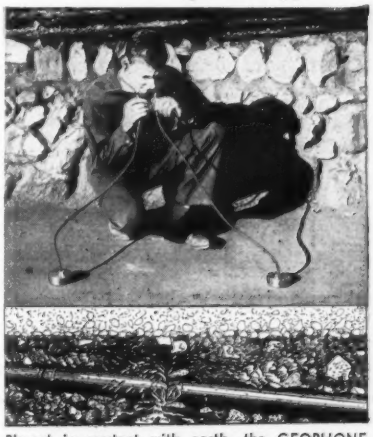
without any digging . . .

with a

GEOPHONE

(Reg. U. S. Pat. Off.)

The original leak locator of the Geophone type



Placed in contact with earth, the GEOPHONE accurately detects, by sound, the position of leaks in underground water or steam pipes.

Leaks are too costly to be ignored. A pin-point size leak wastes 65,000 gallons of water annually!

A GEOPHONE saves the cost of locating leaks—saves the costs of surveys, excavating, replacing. A big paying investment for water, sewerage and Public Works Departments; for any plant with underground water or steam pipes.

Outfit complete with two GEOPHONES, connecting tubes, earphones, in heavy leather carrying case with shoulder straps. **...$75**

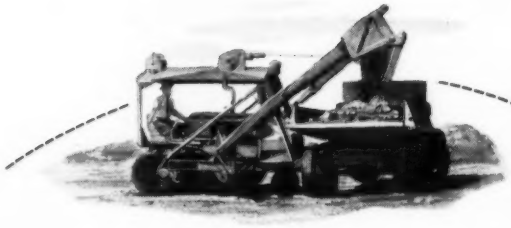
Pipe Finders, $100.00; Dipping Needles, $18.50; Pipe Phones, $3.70.

Write at once to

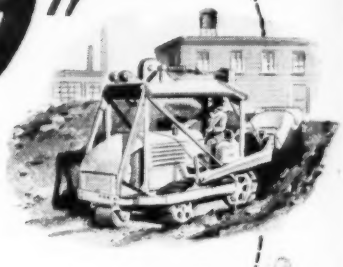
Globe Phone Mfg. Corp.

Dept. A, Reading, Mass.

Manufacturers of the Geophone Since 1918

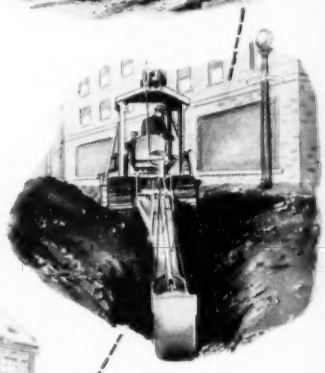


"MAINTENANCE handyman"



There's virtually no limit to the number of useful tasks an Oliver "Cletrac" crawler tractor equipped with a Sargent OVERHEAD Shovel can do to stretch your maintenance dollar.

Want a quick, easy way to tear up asphalt paving? Put a Cletrac on the job and watch that asphalt come off *fast*. Interested in snow removal? Cletrac provides an economical answer. Looking for a better way to remove debris from streets and alleys on building or repair jobs . . . digging and back-filling ditches, digging excavations? You can't beat Cletrac!

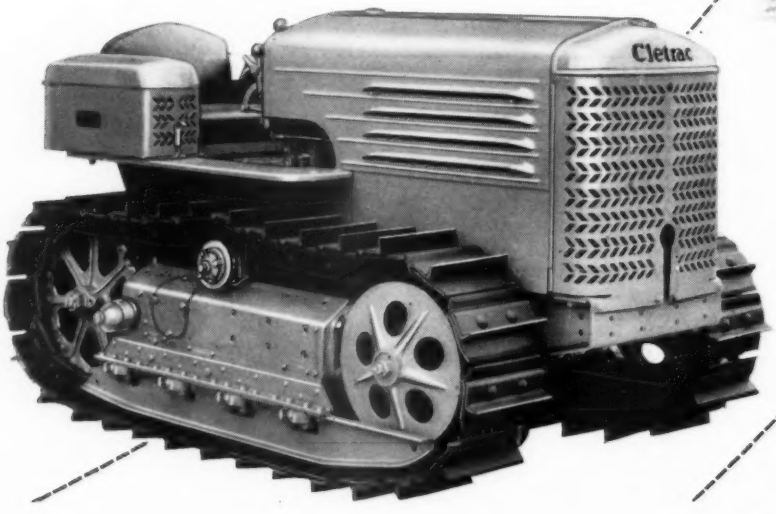


This versatile unit materially speeds job progress . . . makes your manpower more effective. It supplies maximum traction for a powerful digging or stripping action . . . for a fast, thorough discharge into trucks, even on slippery, muddy footing. Its extra maneuverability and compactness permit it to operate in restricted areas without tying up traffic.

For all the facts, write The OLIVER Corporation, Industrial Division, 19300 Euclid Avenue, Cleveland 17, Ohio.

Cletrac

a product of The OLIVER Corporation



"THE SIGN OF EXTRA SERVICE"

This Breathing Mask Creates Its Own Oxygen

The MSA Chemox Oxygen Breathing Apparatus manufactured by the Mine Safety Appliance Co., Braddock, Thomas, and Meade Sts., Pittsburgh, Pa., is a self-contained breathing apparatus in which the wearer is independent of the outside air. It affords complete respiratory protection for a minimum of 45 minutes and generates its own oxygen for the wearer with a replaceable canister. Many municipalities have found it invaluable equipment for sewer repair crews, firemen, and other emergency rescue personnel. This apparatus has been used by the U. S. Navy in fire and battle conditions for more than four years.

The MSA Chemox Oxygen Breathing Apparatus has no outside attachments, and makes the wearer completely independent of outside air. The flow is regulated by the wearer's own requirements.

Chemical evolvement of oxygen in the Chemox replaceable canister occurs by reaction with the wearer's exhaled breath. It produces a supply of pure oxygen in exact accordance with his varying breathing requirements. Insertion of a Chemox canister prepares the apparatus for immediate use. The canister weighs only 4 pounds and can be stored indefinitely until used.

The complete mechanism weighs 13½ pounds and is extremely simple to use and maintain. It has no moving parts, high pressure cylinders, valves, or fittings. It consists of an all-vision facepiece with extra large fog-lenses, breathing tubes, and a comfortable harness. Additional information may be obtained from the company.

Superior Engine Opens New Branch

The Superior Engine Division of The National Supply Co., Pittsburgh, Pa., has opened a southeastern regional office at 531 Gravier St., New Orleans, La. R. E. Hoffman, who has been manager of the division's office at Jacksonville, Fla., will be manager of the new branch office.

J. F. Tucker, Jr., field service engineer for the Oil Field Machinery and Equipment Division of The National Supply Co., also will have his office in New Orleans. Complete sales and service facilities are now available at the new office.

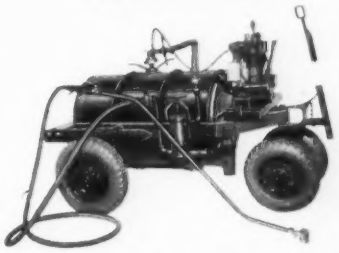
Ohio Brass Names Parsons Technical Director

The Ohio Brass Co., Mansfield, Ohio, has appointed Richard W. Parsonsto the position of technical director of the Mansfield factory.

Richard W. Parsons

Mr. Parsons,, who has been in the engineering department of Ohio Brass for twenty years, was named assistant metallurgist in 1929, and plant metallurgist in 1931. He held this position until 1942, when he became chief metallurgical engineer, the position he held until his recent appointment.

STREET REPAIRS

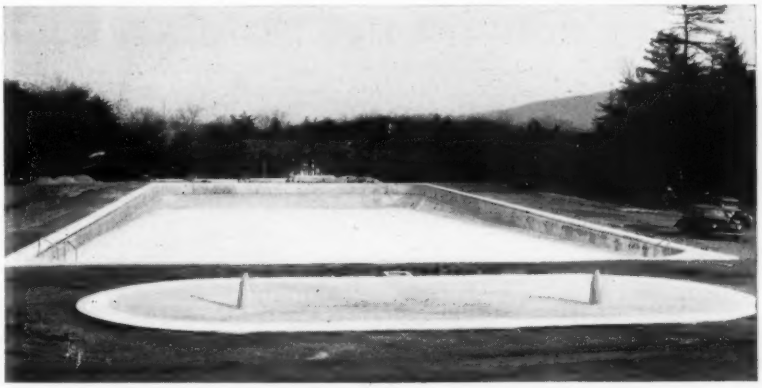


This **TARCO SPRAYER** is a COMPACT, MOBILE, VERSATILE machine that applies asphalt emulsion for repair, resurfacing, and construction "direct from the shipping drum."

A FASTER, CLEANER, PROVEN method of street and highway maintenance.

Street Cleaners' Cans and Carriers
Tar and Asphalt Pouring Pots and Buckets

Tarrant Manufacturing Co.
East Avenue,
Saratoga Spa, New York



"GUNITE" SWIMMING POOL

The 90' x 225' all "GUNITE" swimming pool and wading pool pictured above is at Palmerton, Penna. This municipal pool was built by us last fall in accordance with our design and is similar to many others we have designed and built in the past.

"GUNITE" is adaptable for several types of private and public pools and offers advantages of complete watertightness, freedom from maintenance expense and low initial cost.

If you plan to build a swimming pool we will be pleased to submit designs and estimates.

Our 72-page bulletin D2300 illustrates pool construction and scores of other uses of "GUNITE." Write for your free copy.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.

"THINK they last longer? Mister, I KNOW

FORD TRUCKS LAST LONGER!"

That's what Mr. R. G. Calvert of Ardmore, Oklahoma, wrote recently. "One of our Ford Trucks 11 years old," he added, "has gone over 250,000 miles and it's still on the job, with lots of good miles in it!"

ONE big reason—FORD BRAKES STAND UP!

The wide, heavy, cast drum surfaces of Ford Brakes are non-warping and score-resistant. They are interlocked and fused with steel drum discs during casting, providing great strength and reducing weight. The two shoes are independently anchored, each shoe being actuated by its own hydraulic piston. Adjustment is extremely simple and entirely external. Brakes are exceptionally stable in adjustment. Entry of water and dust is minimized by closely fitted tongue-and-groove design, where edges of drums meet backing plates. Ford brake design promotes long lining life, consistent performance, extra-safe stopping ability and easy pedal pressure.

Ford

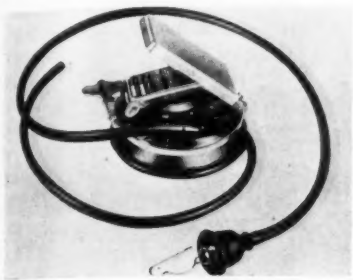
THE 6 YOUR PICK OF POWER THE V-8

Famous everywhere for fast starts, easy high speeds and outstanding endurance, the Ford heavy duty Truck is an investment universally approved by the taxpayers for fire-fighting equipment. This unit is by American-La-France-Foamite Corp., Elmira, New York.

ONLY FORD GIVES YOU *ALL* THESE LONG-LIFE FEATURES: Your pick of power—the great V-8 or the brilliant Ford Six—extra-strength frames, with siderails *doubled* in heavy duty models—new Flightlight, 4-ring, oil-saving pistons—full-floating and ¾-floating axles, with axle shafts free of weight-load . . . more than fifty such endurance-engineering features in all. It's because of this long-life construction that *of all trucks 14 years old or older on the road today, there are more Ford Trucks than all other makes combined!* More than 100 body-chassis combinations to choose from. Ask your Ford Dealer to show you!

MORE FORD TRUCKS IN USE TODAY THAN ANY OTHER MAKE!

Pocket Filter Plant Provides Safe Drinking Water



The Mini-Filter pocket size filter.

A pocket-size filter plant called the Mini-Filter is the latest boon to construction crews and small traveling groups.

Originally developed during the war for the armed services, the Mini-Filter was used successfully all over the world. It includes a hand pump and filter together with a purifying kit—Aqua-Tabs—all in a unit weighing less than 5 pounds. The principle of operation is the same as that used by municipal filter plants.

The unit will be marketed through sporting goods dealers by Wallace & Tiernan, Belleville, N. J.

Also to be marketed by Wallace & Tiernan is a new water purifying kit, Aqua-Tabs, which contains chemicals for purifying, testing, and removing the chemical taste from the water.

Gar Wood Makes Appointments

Gar Wood Industries, Inc., Detroit, Mich., has announced the appointment of four key personnel.

E. B. Hill

E. B. Hill, who has been with Gar Wood since 1925 and was formerly district manager of the general line, with headquarters in Chicago, has been named director of factory sales. In his new post he will supervise all factory sales activities, including those of the company's Buckeye traction ditcher and St. Paul hydraulic hoist divisions.

The fact that Gar Wood is now considered one of the leaders in the road machinery business is generally credited to Mr. Hill, who instituted the negotiations between his company and the Isaacson Iron Works that led to Gar Wood's entry into the field in 1934.

Nick Etten, first baseman of the New York Yankees, has become associated with Gar Wood's Chicago branch as assistant to the manager. He will return to the Yankees when the baseball season begins.

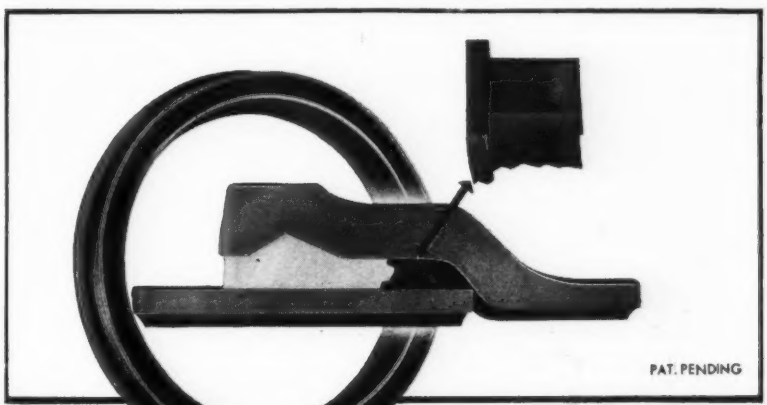
Ben C. Helm, a veteran of more than thirty-five years in the automotive and allied industries, has been appointed to the staff of W. H. Hammond, vice president in charge of sales. Mr. Helm's first assignment will be to make a market analysis for the boat division while assisting in co-ordinating its sales activities. He has been with the Packard Motor Co., Locomobile Co. of America, Studebaker and Chrysler.

William H. Lingner, formerly with the hoist and body sales department, has been appointed assistant manager of the Gar Wood San Francisco branch.

Nordberg Appoints Florida Sales Representatives

Mark J. Anderson & Co., Tampa, Fla., has been appointed Florida sales representative for the Nordberg Mfg. Co., Milwaukee, Wis., to handle all marine and stationary engines, from the 9-by-11½-inch engines up to and including the largest size.

Mr. Anderson began work in the diesel field with his father, following his graduation from engineering school in 1920. In 1935 he joined Fairbanks-Morse, with whom he was connected until he resigned to enter business for himself. Mr. Anderson organized his firm in June 1946.



Improved RING PACKING... assures pouring of dry joints... The Smith-Blair Water-Lock Ring does a real job of packing a bell and spigot cast-iron pipe joint! It is self-locking; it is self-adjusting to oversize bells; its sealing action automatically increases when pressure exists in the line. Made of molded rubber, it is non-porous and cannot be a culture-point for bacteria or any other contaminating element. It is installed quickly by simply rolling it back over the spigot. There is no cutting, fitting or chances for oversight; and its use actually saves on installation time. It is the only sealing ring hydrostatically designed to increase its sealing action automatically from pressure in the line. Effectively dams off water and assures pouring of dry joints.

Hydrostatically designed to hold 40-60 lb. pressure without compound.

Used with any joint compound. Saves time. Makes a better joint.

Immediate Delivery!

Stocked in principal cities. Write for name of your nearest Smith-Blair Distributor.

SMITH-BLAIR WATER-LOCK RING PRICES					
Size	500 or more (each)	100-499	50-99	1-49	Approx. Shipping Wt. per 100 rings
4"	18¢	20¢	21¢	24¢	25 lbs.
6"	22¢	23¢	24¢	26¢	35 lbs.
8"	25¢	26¢	27¢	30¢	45 lbs.
10"	31¢	32¢	33¢	35¢	55 lbs.
12"	37¢	38¢	39¢	41¢	65 lbs.

Packed 50 rings to a carton. Broken cartons take the 1 to 49 price shown above. Quantity prices based on full cartons.

SMITH BLAIR INC.
Water works supplies and specialties

SOUTH SAN FRANCISCO • CALIFORNIA

ALSO...BRONZE SERVICE CLAMPS • STEEL & C. I. FLEXIBLE COUPLINGS • FLEXIBLE REDUCING COUPLINGS

Now Your City Can

Finance *Municipal* Parking Lots

With 10-Hour Meters

The New

PARK-N-LOT* MODEL PARK-O-METER

Solves Every Off-Street Parking Problem

Automatic Park-N-Lot* Meters, embodying the same time-proved mechanism employed in the famous Park-O-Meters, provide a permanent solution to all off-street parking problems. They pay for themselves quickly; pay for the parking facilities; then continue to bring in revenue.

Fully variable to meet every coin and time combination that may be required.

Note these typical operating plans:

FRINGE AREA	BUSY AREA
2 hours, 1 nickel	1 hour, 1 nickel
4 hours, 2 nickels	2 hours, 2 nickels
6 hours, 3 nickels	3 hours, 3 nickels
8 hours, 4 nickels	So on through 10 hours
10 hours, 5 nickels	5 hours, 1 quarter
10 hours, 1 quarter	10 hours, 2 quarters

* Registered Trade Mark U. S. Pat. Off.

DELIVERIES NOW BEING MADE . . .

WRITE TODAY FOR DETAILS

Magee-Hale **PARK-O-METER COMPANY**

COMMERCE EXCHANGE BUILDING • OKLAHOMA CITY 2, OKLAHOMA

MACNICK COMPANY, *Manufacturers*, TULSA, OKLAHOMA

Ryerson Appoints New Divisional Heads

The appointments of Charles S. Hegel as manager of the Stainless Steel Division and John W. Queen as manager of the Alloy Steel Division of Joseph T. Ryerson & Son, Inc., Chicago, Ill., have been announced by Everett D. Graff, president. G. Van Dyke, former head of the Ryerson Special Steels Div., retired December 31, 1946, after thirty years with the organization.

Charles S. Hegel

Mr. Hegel joined the company in 1928, attaining the position of manager of the Special Steels Department. Mr. Queen became a member of the Ryerson sales staff in 1933 at the New York plant of the company. He was appointed manager of the Alloy Steel Department at New York the following year.

John W. Queen

Both Hegel and Queen have supervision over their respective divisions for the entire network of twelve Ryerson Steel-Service plants.

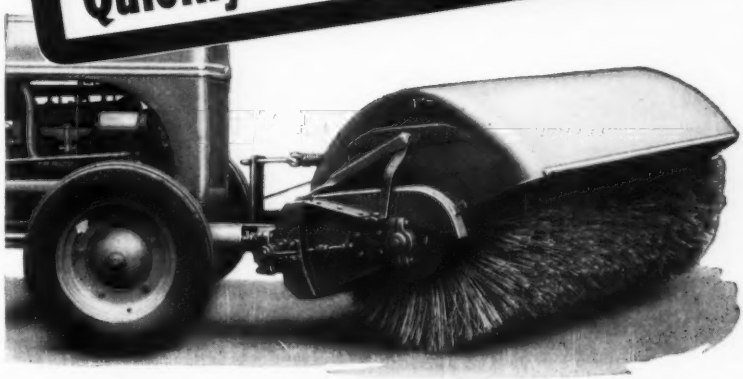
Dual Parking Meter Co. Appoints E. W. Ellis

Edison W. Ellis, who was assistant director and chief engineer in the Ohio Department of Highways for two years, has been appointed executive vice-president of The Dual Parking Meter Co., Canton, Ohio.

Edison W. Ellis

A graduate of Ohio Northern University, he taught engineering in the University's College of Engineering, after which he joined the Ohio State Highway Department.

Remove RUBBISH and SNOW
from Your Streets, Alleys and Walks
Quickly-Easily-at Low Cost



LITTLE GIANT POWER SWEEPER

If you find hand sweeping and snow shoveling too costly and slow, but your budget does not permit extensive expenditures for mechanical equipment, then the Little Giant Sweeper will meet your requirements.

For All Tractors, Jeeps

Little Giant Sweeper mounts on all tractors and Jeeps, normally requiring less than 90 minutes to attach. Operates from power take-off. Brush sets at 30 degree angle. Sweeps to right side of tractor, outside of wheel path. Sweeps against forward motion of tractor for increased efficiency. Dependable chain drive—all moving parts are shielded for operator's protection.

Long-Wearing Brush—Dust Hood

Brush lengths of 5, 6, 7, 8 and 9 feet can be furnished. The 5-foot length is recommended for sidewalk snow sweeping. Long-wearing Palmyra fibre brush, refillable at nominal cost. Adjustable ground pressure—brush can be quickly set to fit all sweeping conditions. Dust hood helps keep tractor clean—assures clear vision for operator. Hood can be removed in 15 minutes for sweeping snow.

Little Giant gets the sweeping job done faster. It quickly pays for itself in labor saved. The initial investment is low—very little upkeep expense. Can be used year-round—for snow in the winter and rubbish the rest of the year.

Designed by experts with years of experience in the sweeping field. Widely used by municipalities, airports, road contractors and industrial concerns.

We are in production and can make prompt delivery. Let us send you complete information and prices. Write

LITTLE GIANT PRODUCTS, INC.

1585 N. ADAMS ST.,
PEORIA 3, ILLINOIS

PRECALKED *PIPE LAYS FAST*

McWane PRECALKED joints are ready to use. Pure lead and redwood wedges are carefully put in the bells at the McWane Plant. No expensive equipment or skilled labor is necessary. Just a man with a hammer and a calking tool are all you need to lay McWane PRECALKED Pipe as fast as the trench is dug!

All sizes, 2" thru 12"

"Just socket the spigot and calk"

McWane Cast Iron Pipe Co.
Birmingham 2, Ala.

McWane PRECALKED Pipe

ETNYRE
Street Flushers
"THE MACHINE OF A DOZEN USES"

CLEANS CLOGGED SEWERS TOO!

Most important job for Etnyre Sanitary Street Flushers is ONE-TRIP street cleaning . . . up to 42 feet wide and even under parked cars . . . in less time, at less cost. Etnyres are equally efficient for fire fighting, pumping out basements, watering shrubbery, used with snow plows in winter, and many other jobs. See your Etnyre dealer or write today for full information.

E. D. ETNYRE & CO., Oregon, Illinois

A "Bull's Eye" every time

A/H LEAK LOCATOR

When hunting leaks, you need not be an expert marksman if you use the A/H Leak Locator. Just place it in contact with the earth, put on the ear-phones, and the A/H Locator will lead you to that underground leak in a jiffy. No hit-and-miss excavating, no unnecessary resurfacing of the street. Price complete with carrying case and strap: $75.00.

pipe locators	dipping needles	pipe phones
$100.00	$17.50	$3.70

Write for circular AC-4

ALLEN - HOWE ELECTRONICS CORP.
150 MAIN ST. PEABODY, MASS.

INFILCO

WATER CONDITIONING AND SEWAGE TREATMENT PLANTS

Send for Bulletin 6200
Accelo Sewage Filter

INFILCO INC., 325 W. 25th Pl., Chicago 16

The "Quinn Standard"
FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 30 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

Quinn Heavy Duty Pipe Forms

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length.

WRITE TODAY

Complete information, prices and estimates sent on request. Also manufacturers of Quinn Concrete Pipe Machines.

QUINN WIRE & IRON WORKS 1623 12th ST. BOONE, IA.

Noble Becomes Vice-President

Daniel E. Noble, who held the position of general manager of the communications and electronics division of Motorola, has been appointed vice-president. The announcement was made by President Paul V. Galvin following a meeting of the Board of Directors of the Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago 51, Ill.

Daniel E. Noble

Mr. Noble joined Motorola in 1940 as director of research, developing frequency modulation communication equipment for mobile service.

J. C. Edler Joins Superior

Joseph C. Edler has been appointed sales engineer with the Superior Engine Division of The National Supply Co., Chicago, Ill. He will represent the company in its marine business on the Great Lakes, and in its industrial and stationary installations in Wisconsin, Illinois, Michigan, Pennsylvania, New York, and Ohio.

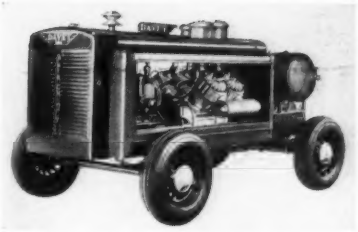
Joseph C. Edler

Mr. Edler was formerly with the Atlas Imperial Diesel Engine Co.

New Air Compressor Trailer or Skid Mounted

A new double-V-type, 160-cubic-foot portable air compressor, known as the Model 160 Air Chief, is now available in standard skid, steel-wheel trailer, and pneumatic-tired trailer mounting styles. On trailers, spring mounting is included without extra cost. Flanged wheel-type units are also manufactured for railroad work.

The compressor unit has three low-pressure cylinders and one high-pressure cylinder, all with a 5¾-inch bore and 4-inch stroke. The overall length of this unit, built as a trailer, is 127 inches. It is 70 inches high and 72¾ inches wide. The V design permits these substantial reductions in dimensions and a weight of only 4640 pounds. The turning radius is 35 feet; standard gas units are equipped with Hercules JXD engines.

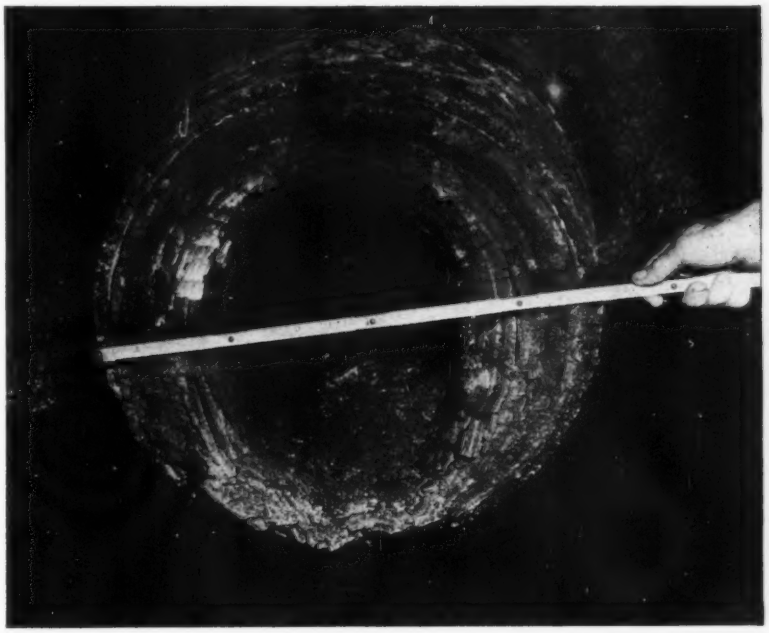


The Davey portable compressor Model 160 Air Chief.

In addition to these features, the new compressor contains all of the construction details that have characterized previous products of the Davey Compressor Co., Kent, Ohio. Aluminum alloy heads are employed for rapid heat dissipation. Aluminum crankcases permit efficient cooling of lubricating oil and effect weight savings, and a pressure equalizer relieves crankcase pressure.

The compressor's three low-pressure cylinders are fitted with individual air cleaners to provide exceptional cooling of cylinders and heads during idling periods. The gas tank is located beneath the air receiver. Side tool boxes are included as regular equipment.

CANCER?



Cancerous conditions of pipe lines wear down pumping equipment, boost electric bills, create fire hazards and aggravate consumers with red water or loosened deposits.

A water system in this condition is as low in efficiency as a cancerous human system. As the medical profession has been trying for years to find a cure for human cancer, so has the pipe cleaning industry been trying to find ways and means to clean pipe at a fraction of its initial cost.

10 YEARS AGO —

"Flexible" discovered a method that would remove even concrete from the interior without any possible injury to the pipe. Such conditions as shown in the above illustration were IMPOSSIBLE, but today a sizable amount of our work is of this nature. WRITE FOR ILLUSTRATED CIRCULAR TODAY.

FLEXIBLE UNDERGROUND PIPE CLEANING CO.

9059 Venice Blvd., Los Angeles, California

855 Board of Trade Bldg. Chicago 4, Ill.
401 Broadway New York 13
147 Hillside Ter. Irvington, N. J.
P. O. Box 165 Atlanta
1624 Harmon Place Minneapolis 3, Minn.
29 Cordan Ave. Roslindale 31, Mass.
P. O. Box 694 Pittsburgh
P. O. Box 447 Lancaster, Texas
41 Greenway St. Hamden, Conn.

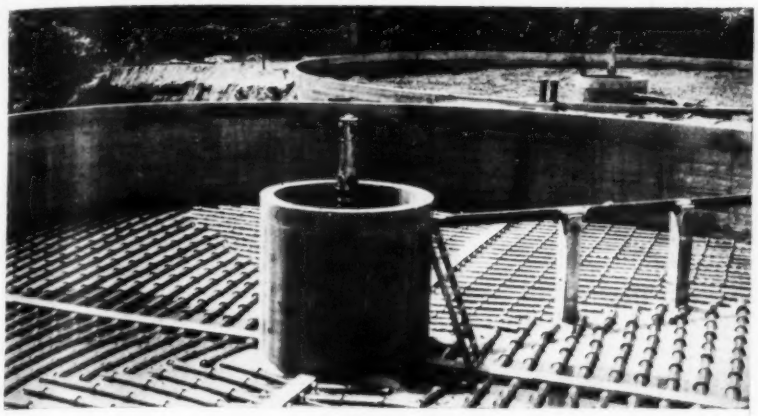
Original Woodcut by Lynd Ward

Through the spring countryside—length by length—U. S. Cast Iron Pipe is being installed for supply lines to carry water from source to city. Long life is of the essence when choosing the kind of pipe to buy for permanent and costly long-line construction. The long life and low annual maintenance cost of U. S. Cast Iron Pipe are not debatable; they are as sure as anything in engineering construction can be.

U.S. cast iron PIPE

U. S. PIPE & FOUNDRY CO.
General Offices: Burlington, N. J.
Plants and Sales Offices throughout U.S.A.

Clay Pipe Underdrains for Trickling Filter



Shown here is a simple method used in draining treated sewage from a treatment plant's trickling filters at Rotterdam, N. Y. An inverted vitrified clay channel pipe, perforated to permit faster passage to outlets, is used as underdrains. Many sanitary engineers claim that this perforated clay pipe is more efficient and economical than the conventional block-type underdrain.

Further information may be obtained by writing to the National Clay Pipe Mfrs., Inc., at any of the following addresses: 111 W. Washington St., Chicago 2, Ill.; 522 First National Bank Bldg., Atlanta, Ga.; 1105 Huntington Bank Bldg., Columbus 15, Ohio; 571 Chamber of Commerce Bldg., Los Angeles, Calif.; and its recently opened office at 117 W. Genesee Ave., Saginaw, Mich., which is under the supervision of C. J. Bauer, Jr. Mr. Bauer has been district engineer of the company for the past six years.

One-Man-Operated Service Pipe Layer

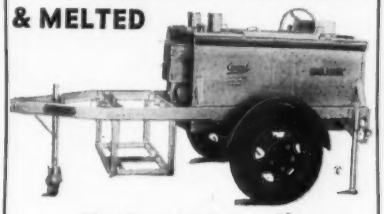
The new Model LHH-2 Hydrauger is easily operated by one man, here seen boring a hole for pipe insertion.

Expressly developed for running in pipe leads, a new horizontal earth-boring tool which is light enough to be operated by one man is being produced by the Hydrauger Corp., Ltd., 116 New Montgomery St., San Francisco, Calif.

Power is provided by a 3.2-hp motor operated by 90 pounds of air pressure. The pilot bit hole, 2 inches in diameter, can be opened up by reaming to 3½ and 4½ inches. For additional ease in handling, boring bar sections are only 2 feet in length and weigh just 5 pounds.

This new Model LHH-2, which is straight-boring for underground distances up to 50 feet, is designed on the same principle as larger Hydraugers.

RUBBERIZED ASPHALT
(FEDERAL SPECIFICATIONS SS-F-336)
CORRECTLY HEATED & MELTED



Under Automatic Thermostatic Control!

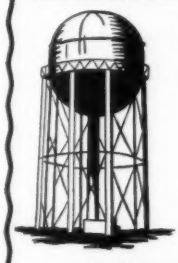
New Double-Vat indirectly heated *thermostatically controlled* Kettle meets all State and Federal Specifications for melting "rubber sealers." "No more inconvenience or loss of time than if we were using ordinary asphalt!" writes one enthusiastic user. "Poured 11,000 feet in one day," reports another who used one kettle to complete a difficult 84,000-foot contract with time to spare. Endorsed by leading compounders. Send for FREE eight page profusely illustrated Bulletin 310AC containing "on the spot" photographs, helpful suggestions, complete specifications, etc. Write TODAY.

AEROIL PRODUCTS CO.
5705 Park Avenue
West New York, New Jersey

APCO-V-APCO PRIMERS
AUTOMATIC
POWER
OR
TANK PRIMERS
AIR RELEASE VALVES
FOR
FILTER PIPE LINES
DISTRIBUTION LINES
AND OTHER USES
17 TYPES

VALVE AND PRIMER CORPORATION
30 W. Washington St.
CHICAGO 2, ILL.

ELEVATED WATER TANK PAINTING



We are industrial painters specializing in Steel Elevated Water Tank Cleaning and Painting, endorsed by National and State authorities, factory and municipal engineers.

- **Reasonable prices** • **Full insurance**
- **Inspections and quotations free**
- **Write for our representative today**
- **No obligation.**

We paint Gas Holders, Warehouses, Smoke Stacks, Mills, Factories; and also repair Brick or Concrete Chimneys

UNIVERSAL CONSTRUCTION COMPANY
1158 W. 34th St., Indianapolis 8, Ind. P. O. Box 1492, Birmingham, Ala.

"GUNITE"

for another

Reservoir Repair!

The water storage reservoir illustrated here was deteriorating rapidly and serious leakage developed. Our engineers were consulted and a "GUNITE" (sand and cement applied pneumatically) lining was recommended.

All disintegrated concrete was chipped out and these areas restored. Then a 2" reinforced "GUNITE" lining was installed on the sides and bottom of the reservoir. The reinforcing was anchored securely to all surfaces before lining work started.

This repair, done by men who know their business, resulted in a completely reconditioned reservoir with many years of added service life, at a fraction of the cost of a new structure.

"GUNITE" is the practical, proven method for restoring reservoirs, dams, bridges, filter plants, tanks, etc. Write for our recommendations on how "GUNITE" can solve your concrete maintenance problems. An attractive bulletin is awaiting your request.

6 AVENUE B
NEWARK, N. J.

PRESSURE CONCRETE COMPANY
ENGINEERS AND CONSTRUCTORS

SOUTH COURT ST.
FLORENCE, ALABAMA

ONE "MUST"
IF WE MUST
There is one "must" if we must pledge to make prompt deliveries of YOUR Outdoor Drinking Fountains, Hydrants and Street Washers.
We must be advised of your requirements without delay.
Every Murdock device is carefully machined and finished; practically made-to-order. And that takes time.
That's why to "Buy MURDOCK means buying Years of Service."
The Murdock Mfg. & Sup. Co.
Cincinnati 2, Ohio
MURDOCK
OUTDOOR DRINKING FOUNTAIN
ANTI-FREEZING COMPRESSION HYDRANT
LARGE ANTI-FREEZING HYDRANTS 10' TO 2' INCLUSIVE
SELF-CLOSING ANTI-FREEZING HYDRANT
"LOCK-LID" STREET WASHERS 3/4" and 1" SIZES

BACK THEM **BUY BONDS**

Mark well this button. It is worn by the men and women honorably discharged from the armed services. Though now in civilian clothes, let's not forget their service to our country and us. They still rate our every consideration.

Meters for Parking Lots

These familiar sentinels, policing the curb-side parking of a thousand municipalities, will soon spread to parking lots under municipal operation. Already ordered by several cities, the new type of meter, known as the Park-N-Lot, will accept nickels or quarters for hourly or all-day parking.

In Oklahoma City, Okla., there are no arguments with parking lot attendants; there are no parking lot attendants. With the advent of the "Park-N-Lot Model", a meter designed to operate on combinations of nickels and quarters through time periods ranging from an hour to ten hours, this city has instituted a series of robot parking lots whose charges vary according to their locations. More than twenty-four time-coin combinations are available with the mechanism without altering the equipment in any way, with the time limits per charge being adjusted according to requirements.

Municipal parking lots can thus be mechanized and policed in the same manner as street parking facilities. Failure to feed the meter results in a summons for illegal parking.

The new meter, manufactured by the Magee-Hale Park-O-Meter Co., Commerce Exchange Bldg., Oklahoma City, 2, Okla., is regarded as a boon to financially harassed cities, since it provides a self-liquidating process of acquiring parking lot sites. Acquisition costs were previously a stumbling block in municipal plans aimed toward public-owned parking lots.

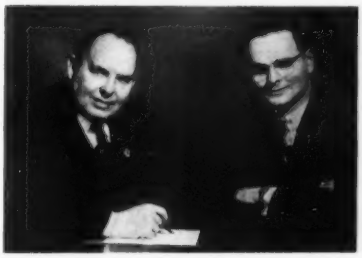
18,000 Copies of Flow Meter Handbook Sold

A recent order received by The Foxboro Co., Foxboro, Mass., marked the sale of the 18,000th copy of "Principles and Practice of Flow Meter Engineering." The Foxboro Co. was a pioneer in the public presentation of information for the calculation of orifice coefficients when such data was regarded by meter manufacturers as a trade secret.

General Detroit Distributes Boston Woven Hose & Rubber

Effective immediately, the General Detroit Corp., 2200 East Jefferson Ave., Detroit, Mich., will be the national distributors for fire hose manufactured by the Boston Woven Hose & Rubber Co., 30 Church St, New York, N. Y. This announcement was made recently by E. A. Warren and Harry F. Maxon, vice presidents respectively of General Detroit and Boston Woven Hose & Rubber.

Boston Woven hose will continue to be made and sold in the established brands, and General Detroit will also continue to market its own Inner Flex fire hose, its motorized fire-fighting equipments, and its portable fire extinguishers.



Harry F. Maxon (left), and E. A. Warren.

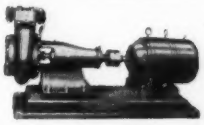
Plan

with

Peerless!

PEERLESS Centrifugal Pumps *(formerly Dayton-Dowd)*

MEET extensive, continuous-duty pumping requirements in all Industries and Municipalities desiring advanced pump design, reduced operating cost and high pump efficiency.



Type DS

CENTRIFUGAL PUMPS

For Chemical, Oil, Food Processing, etc. Capacities: Up to 600 G. P. M. Heads to 230 ft.

Type XT

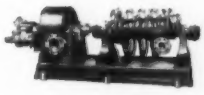
TURBINE (Vane) PUMPS

For Butane-Propane, General & Process Work. Capacities: Up to 150 G. P. M. For high heads.

Type A

CENTRIFUGAL PUMPS

For General Services-Maximum efficiencies. Capacities: Up to 60,000 G. P. M. Sizes: 2″ to 42″.



Type B

BOILER FEED PUMPS

For High Pressures in Refinery, Pipe Line & Boiler Feed Services. Pressures up to 700 lbs.

Type AF

FIRE PUMPS (*formerly Dayton-Dowd*)

Underwriters Approved. Capacities: 500 to 2000 G. P. M. One of a Variety of Peerless Fire Pumps.

Peerless Pump Division manufactures an extensive line of high quality centrifugal pumps for usual or unusual pumping applications. The Peerless staff of highly trained engineers or field representatives will gladly assist you in prescribing the proper pump for your specific application. If you are considering a pump installation demanding long range, trouble-free service, then Plan With Peerless – It will pay!

PEERLESS PUMP DIVISION

FOOD MACHINERY CORPORATION

Factories: 301 W. Avenue 26, Los Angeles 31, California; Quincy, Illinois; Canton 6, Ohio
District Offices: Canton 2, Ohio; Ardmore, Pennsylvania; Decatur, Georgia; Dallas, Texas
Distributors in Principal Cities

The Morris PORTABLE DREDGE Is EASILY MOVED From Job to Job

Does Your Dredging at Surprisingly Low Cost

Engineers recommend the Morris Portable Dredge because it can be dismantled quickly and moved from one job to another with minimum expense. Does its work rapidly on inland jobs often inaccessible to regular dredging equipment. Operates with only one man, requires only two or three men for manipulating the pipe line.

You Can Use the Morris Portable Dredge on Many Inland Jobs

It cleans water storage reservoirs . . . Deepens lakes and channels . . . Restores eroded beaches . . . Fills in undesirable lowlands . . . Beautifies parks and lakes. It does not disturb solids as much as other dredges . . . nor does it cause excessive turbidity. In fact, in most cases, reservoir water is usable even during the dredging operations.

Order A Morris Portable Dredge Now

We shall be glad to send one of our experienced hydraulic dredge engineers to discuss your dredging problems with you. He will recommend the purchase of a dredge only if its use is sound, practical and economical.

Should you require a dredge, we can design and build it now complete with either electric, gasoline or Diesel engine . . . and make installation of dredge and piping all ready for operation. Furthermore, we shall furnish an operator for an initial period of time until your own dredge operator learns operation and maintenance of the dredge.

Get Full Information About Portable Dredges

Write us today for Bulletin 177 which illustrates the Portable Dredge and a wide range of other dredges.

MORRIS MACHINE WORKS • Baldwinsville, N. Y.

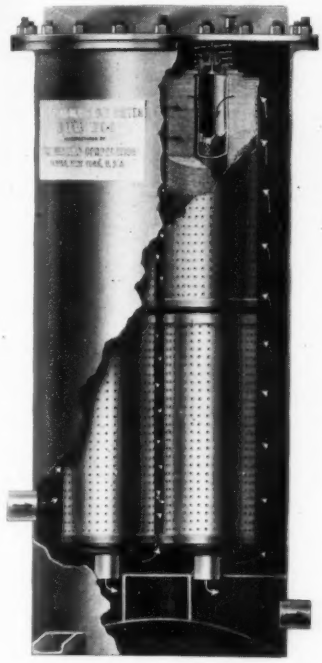
Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*

New Line of Lubricating Filters

A new line of lubricating, fuel, and industrial oil filters particularly useful for diesel units has been announced by the Hilliard Corp., 102 W. Fourth St., Elmira, N. Y.

Constructed of steel and utilizing from one to eighteen filter cartridges measuring 7¼ by 18 inches, these Hilco Hyflow oil filter units are available with or without heaters.



The Hilco Hyflow oil filter, model HFC-8, is manufactured by the Hilliard Corp.

The oil is delivered to the inlet of the filter and is forced from the outside of the filter cartridge toward the center and then out through the outlet back to the system, either by means of an auxiliary motor-driven pump set or directly from engine or equipment pressure. Hilco units may be operated as by-pass or full-flow filters, according to the flow rate required.

Filter elements available for use in these units are made of Hiltex-cellulose, a highly efficient grade of filtering material, to handle the additive oils; or Hilite-fullers earth for handling straight-run mineral oils. These units are said to have micronic filtration and high flow rates at relatively low pressures.

Bulletin F-154, describing these units in detail, is available from the manufacturer.

Dorr Sells Interest In Electro Rust-Proofing Corp.

The Dorr Co., 570 Lexington Ave., New York 22, N. Y., has sold its interest in the Electro Rust-Proofing Corp., 1 Main St., Belleville, N. J., to the Wallace & Tiernan Co., Newark, N. J.

Burns & McDonnell Move Office

Burns & McDonnell Engineering Co., Kansas City 2, Mo., has moved its offices from 107 West Linwood Blvd. to 95 and Troost Sts., in the same city. This is preparatory to the construction of its own building, scheduled as soon as present building restrictions are lifted.

A Roller For Every Job

Sturdy, heavy-duty rollers, engineered to stand up under the toughest conditions. Pierce-Bear Tandem Rollers are powered by economical Allis-Chalmers 4-cylinder industrial type gasoline engines. Variable weights, from 3½ to 5 tons with built-in water tanks for ballast and wet rolling.

Pierce Medium Bear
3½-5 tons

Pierce Baby Bear
2½-3 tons

The new 2½-3-ton Pierce Baby Bear is designed for close-in work and small area maintenance. It works against a curb up to 25 inches high and within 1⅛ inches of a higher wall or building. Final drive is within the rear roll. Use Pierce-Bear Tandem Rollers for all-around performance. Write for folder.

Pierce-Bear Rollers

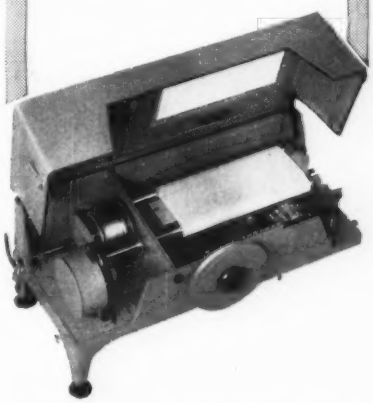
Lewis Manufacturing Co.

415 Hoefgen Ave.—San Antonio 6, Tex.

L&S

STEVENS WATER LEVEL RECORDER

Type A35



FIRST developed in 1911, the Stevens *Type A* Recorder is used the world over. Fundamental principles of the instrument are the use of a continuous chart and an unlimited range of stages.

The *Type A35* consists essentially of a height element mechanism to register elevation of water surface above a chosen datum to a convenient scale, plus a time element mechanism to move a chart at a conveniently uniform speed. Visible graph strip charts 10" or 20" wide (also corresponding metric charts) . . . Weight-driven clock (synchronous electric clocks available on order) . . . Non-corrodible metal used throughout . . . One-piece protective hinged cover . . . The *Type A35* is adaptable to remote registration. Write for Bulletin No. 12.

LEUPOLD & STEVENS INSTRUMENTS

Manufacturers since 1907

PORTLAND 13, OREGON

Hydrographic • Surveying • Navigation
Automatic Controls

Leupold & Stevens Instruments
4445 N. E. Glisan St., Portland 13, Oregon

Please send Bulletin No. 12 on the Stevens *Type* A35 Recorder.

Name _____

Organization _____

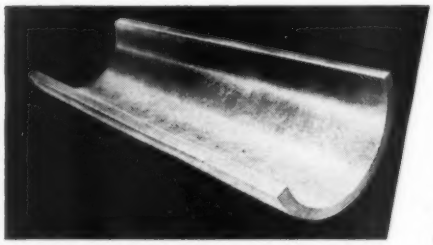
Title _____

Street _____

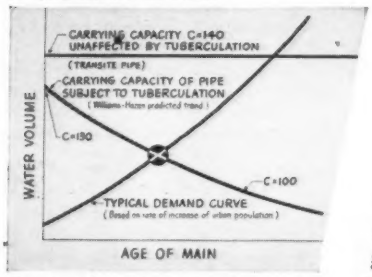
City _____ *Zone* _____ *State* _____

"Plenty of 'fire-flow' here!"

...says the Testing Crew



Transite's smooth interior is permanently unaffected by the destructive effects of tuberculation. Its high carrying capacity *stays high.*



This chart shows that, although water demand continually increases, the carrying capacity of water mains subject to tuberculation progressively decreases. Note the much longer period during which a Transite line, represented by the straight curve, continues to meet demands.

TESTS such as those made periodically by the fire insurance underwriters emphasize the fact that the most effective fire protection is provided by the water pipe with a *maintained* high carrying capacity.

Transite Pressure Pipe has this important advantage. It has an unusually high flow coefficient (C=140) . . . a coefficient which stays high because Transite, being made of asbestos and cement, is completely immune to tuberculation. This troublesome form of internal corrosion can never reduce Transite's initial high carrying capacity.

This means that a Transite water line helps assure the required flow of water for fire-fighting needs. It means that pumping costs can be held to a minimum. And it means that taxpayers can receive the benefits of the favorable fire insurance rates which result from a modern, efficient water distribution system.

The assurance of a maintained high carrying capacity is one of many reasons why it will pay you to investigate Transite Pressure Pipe when you plan water works improvements. Transite's proved resistance to corrosive soils . . . its tight, flexible joints that safeguard against underground leakage . . . its maintained strength and continued low maintenance are other advantages you will want to know more about in connection with your water works projects.

To get all the facts write for brochure TR-11A. Address Johns-Manville, Box 290, New York 16, N. Y.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville

Transite Pressure Pipe

An Asbestos Product

Rockwell Elects President

At the annual meeting of the Rockwell Mfg. Co., Pittsburgh, Pa., the board of directors elected W. F. Rockwell, Jr., president. Mr. Rockwell had served as vice - president and general manager of the company.

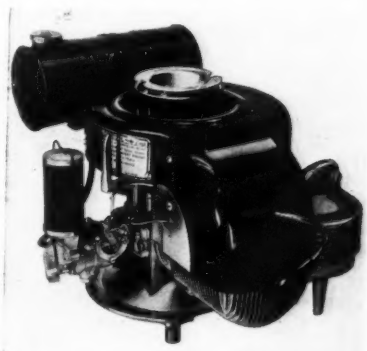
W. F. Rockwell, Jr.

Colonel Willard F. Rockwell, who has been both president and board chairman, will retain the office of chairman of the board.

New Light-Weight Engine Series

A new line of small, light-weight, 2-cycle gasoline engines which range from 2½ to 4 hp has been announced by McCulloch Motors Corp., Los Angeles, Calif. Three of these models are engines of a general-purpose type, adaptable to industrial, marine, and transportation, and other fields. In addition, the company is prepared to design and manufacture special-purpose engines tailored to specification.

The basic advantages claimed for these new Series 1200 engines are the expectionally light weight derived chiefly from the extensive use of aluminum die-castings; superior starting and idling characteristics obtained through the use of a patented "reverse-flow" scavenging system and an automatic oil injection device; compactness;



The model 1200D McCulloch 2-cycle gasoline engine develops 2.5 hp at 2500 rpm, weighs 24 pounds, and is especially suited to lawn mower and pump applications.

adaptability for additional applications, and simplicity of construction.

For a detailed description of the various types of engines in this new series, write for the 8-page brochure now being distributed by McCulloch Motors Corp., 6101 W. Century Blvd., Los Angeles 45, Calif.

For FAST, LOW COST STREET PAVING—

BLAW-KNOX (UNIVERSAL) STEEL FORMS

Thousands of contractors have switched to Blaw-Knox Steel Forms, and find they get a high dollar return on their investment. Whether the job is city street, curb and gutter or sidewalk—it can be done quicker and cheaper with standard Blaw-Knox form set-ups.

Easy to handle in both placement and removal. Too, the steel imparts a smooth finish to the concrete, eliminating the hand-finishing necessary when expensive wood forms are tediously built for each job. These forms are always ready for action—to use again and again . . . For illustrated data on the complete line, write today for Catalog No. 1859.

BLAW-KNOX DIVISION
of Blaw-Knox Company
2102 Farmers Bank Building
Pittsburgh 22, Pa.

BLAW-KNOX CONSTRUCTION EQUIPMENT

"JUST LOOK HOW TIFA DOES IT!"

. . . DEATH DEALING FOG FOR INSECTS

TIFA discharges newly developed as well as the older insecticides, fungicides, repellents or hormones of the selected particle size in a *true fog*. This fog *spreads rapidly* over a wide area, *clings* to all objects in its path and *permeates* the smallest crevices.

TIFA's compactness and ease in handling . . . a one-man unit powered by a standard-make gasoline engine . . . enable it to be used wherever control of insect pests is essential to public health and welfare . . . not only on garbage or fill dumps but in parks, resorts, swamps, and on beaches.

TIFA can be easily mounted on a small truck, or on a motor barge for clearing shore areas. It is QUICK . . . SURE . . . ECONOMICAL . . . and *built to last.*

* * *

Write for illustrated folder on sensational TIFA, highly praised by many scientists, health departments and park commissioners.

TIFA

TODD INSECTICIDAL FOG APPLICATOR

A Product of

COMBUSTION EQUIPMENT DIVISION

TODD SHIPYARDS CORPORATION

601 West 26th Street, New York 1, N. Y.

How to Trace Water Pipe Easily

Buried pipes are easily found with the Globe radio-type pipe finder.

The manufacture of a selective pipe finder for locating underground pipe that may be adjacent to other sizes of pipe is the latest achievement of the Globe radio-type pipe finder.

The equipment locates and traces any type of pipe—water, gas, oil, or air, and consists of three units which may be operated easily by one man. Operated on standard batteries, the mechanism is simple to use and highly accurate. The pick-up is effective regardless of the type of ground.

For detailed description of the equipment, write to the Globe Phone Mfg. Corp., Dept. A, Reading, Mass.

SPECIALISTS in

BRONZE TABLETS

For Every Municipal Need

Memorial and Commemorative Tablets for Municipal Buildings—Hospitals • Homes • Courts • Schools • Art Centers.

Bronze Tablets and Letters for Statues, Cornerstones, Doorplates, Signs.

Send for illustrated catalog with complete "order-by-mail" information.

UNITED STATES BRONZE SIGN CO., INC.

"Bronze Tablet Headquarters"

Dept. AC

570 Broadway New York 12, N. Y.

Dual Parking Meters New Canadian Industry

Formed as a subsidiary of The Dual Parking Meter Co., of Canton, Ohio, The Dual Parking Meter Co. of Canada, Ltd., 226 Bay St., Toronto, Canada, has production of multiple penny-and-nickel units under way in the Western Clock Co. plant at Peterborough, Ont. The meters are being produced with Canadian materials and by Canadian labor, with distribution by E. A. Horton Sales Co., Toronto, for the Dominion of Canada, and A. E. Foreman and Sons, Vancouver, for British Columbia, Alberta, and Saskatchewan.

In 1935, when parking meters were invented to answer the problems of controlling vehicular parking, the first installation of a Dual Automatic meter was made in Oklahoma City, Okla. Since then, more than 250 U. S. cities have followed suit with Dual meters.

In Canada, Duals have already been installed in Vancouver, B. C., New Westminster, B. C., and in Brantford and Woodstock, Ont. Other Canadian cities also are scheduled to get them.

The overwhelming popularity of metered parking is the result of many advantages: elimination of over-parking, aid in controlling traffic, simplification of traffic regulation and enforcement, and, of course, the fact that wherever installed, the meters have paid for themselves, while providing revenue for other municipal services.

SPARLING MAIN-LINE METERS

CONSISTENT ACCURACY in Flow Measurement

For 27 years, Sparling Main-Line Meters have given service and satisfaction in Water Works installations throughout the country.

Complete totalizing units are tube-mounted for Flanged, Bell & Spigot, and Threaded pipe; also with Saddle mountings for installation on the pipe itself.

Flow Indicators and Recorders and Controls are added as desired.

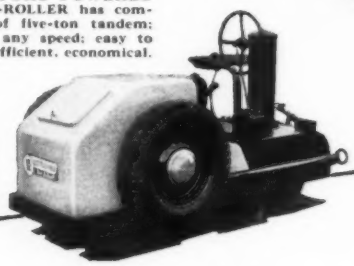
Bulletin 309 comes upon request

The SPARLING Manufacturers of WATER MEASURING EQUIPMENT

LOS ANGELES 54—Box 3277 Terminal Annex
CHICAGO 16—3104 South Michigan Ave.
622 Broadway—CINCINNATI 2
101 Park Avenue—NEW YORK 17
BOSTON—6 Beacon Street

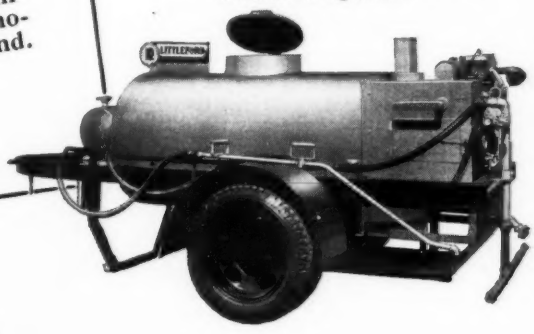
Keep on Top of That Black Top!
REPAIR WITH LITTLEFORD UNITS

LITTLEFORD POWERED TRAIL-O-ROLLER has compaction of five-ton tandem; trails at any speed; easy to operate, efficient, economical.



Night and day your roads are being pounded by endless traffic. It can't let up and neither can your repair crew. Track down pavement breaks with Littleford bloodhounds. The 84-HD Kettle can repair any road by applying asphalt to stones, gravel, etc. The 84-HD includes double heat circulation and screened reservoir, and these features assure faster heating, faster draw-off of material, and the safest and most economical kettle operation. Combine with Littleford's famous Trail-O-Roller and their No. 101 Utility Spray Tank and you have a combination that really makes for speed and economy, and that's what you want the year round. It's the antidote to black top disrepair!

Littleford 101 Utility Spray Tank is combination of three units: Spray bar for spraying, hand spray for patch work, pouring pot outlet for filling cracks.



BLACK TOP ROAD MAINTENANCE EQUIPMENT · LB · SINCE · 1900

LITTLEFORD

LITTLEFORD BROS., Inc.

500 E. PEARL ST., CINCINNATI 2, OHIO

Radio in 152-162 Band Tested at Dearborn

More than 100 police officers of state, county, and city departments agreed that high-quality transmission on the 152-162-mc band compared favorably and in some respects was superior to the 30-40-mc band after witnessing a day-long propagation survey of Motorola police radiotelephone equipment at the Dearborn, Mich., police department. The tests were held by the Michigan Chapter of APCO and were under the guidance of Marion Henry, superintendent of communications for Dearborn. Fifty visitors present at the tests represented non-police groups that included the Detroit Edison Co., Detroit Street Railway, the Ford Motor Co., and the Detroit Fire Department.

Three cars equipped with 30-watt FM radiotelephone units reported solid coverage over a distance of twenty-eight miles. In downtown Detroit business districts, the cars cruised under viaducts and bridges and maintained constant contact with other cars up to eight miles away despite noise or other interference.

The triple-skirt co-linear coaxial antenna, erected permanently on the top of Dearborn's 185-foot tower, is just 2 feet from a 33.1 ground plane antenna which operates the city's 500-watt transmitter, using amplitude modulation. Despite the proximity of the antenna, no interference disrupted either communication system.

The Motorola portable station transmitter (left) and the 30-watt FM radiotelephone units installed in a car. Eugene Goebel, communications sales manager of Motorola (right), explains the installation to Marion Henry (left), superintendent of communications of Dearborn, Mich., and Dearborn Chief of Police Irving Nielsen (center).

Bailey Bridges Available

Bailey bridges, an invention of World War II, used by troops for quick spanning of rivers and other obstacles, are now being offered for sale by the War Assets Administration.

These bridges are being used by federal, state, county and municipal highway departments, the Forestry Service, and the Department of Interior for emergency use; by veterans for use as secondary bridges on farms and ranches, and by the Canadian Power Co. for logging operation.

Considered the "bridge of possibilities", it is of a fixed steel panel. The design makes use of component parts in 10-foot panel sections which can be easily handled by manpower.

Because of their design, these bridges lend themselves to spans from 40 to 180 feet and can be assembled to meet varying conditions of span and load. The panel, which is a truss section 10 feet long, 5 feet wide and 7 feet high, is the basic member of the bridge.

The strength of the main trusses may be increased by adding extra panels alongside, by adding an extra story, or by both methods. There are five types: single-truss, single-story; double-truss, single-story; triple-truss, single-story; double-truss, double-story, and triple-truss, double-story.

Detailed information can be obtained from WAA regional offices having inventories—principally Spokane, Cleveland, and New York.

It is suggested, however, that in order to effect prompt service the purchaser know the exact use and size and type of structure he wishes to build.

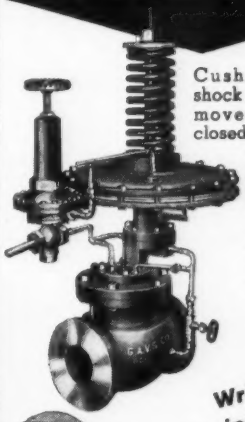
Present WAA's inventories include about ten million dollars worth of component parts.

GOLDEN-ANDERSON

Single Acting Differential

ALTITUDE

VALVES



Cushioned against shock or jar as valve moves into open or closed positions. Needle valve control will instantly regulate speed of operation to existing pressure condition. 150 lb. to 400 lb. working pressure.

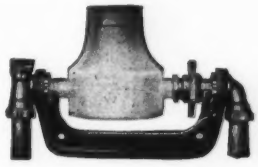
Write for Descriptive Catalog

GA

GOLDEN-ANDERSON VALVE Specialty Company PITTSBURGH 22, PA.

SATISFACTION

Ford Yokes satisfy all conditions necessary for dependable water meter settings. The meter can be installed and removed easily. The reliable inverted key angle valve can be seen easily and is operated with a light wrench. The piping is never disturbed in meter setting or removal. When the meter is removed the unauthorized use of water is effectively controlled.



Ford Yokes have been the standard meter setting in many water systems for over three decades because they have given complete satisfaction. Write for catalog and learn about the advantages you will obtain from setting your meters this better way.

The FORD

METER BOX COMPANY, INC.

Wabash, Indiana

1916

When College Ave., Ft. Collins, Colo., was paved with portland cement concrete, it carried an average of 500 vehicles per day. Street roped off for dedication in October, 1916.

1946

Unretouched photograph taken from same spot after 30 years during which traffic increased to 8,500 vehicles per day. Street is on U. S. Highways 87 and 287.

After 30 Thrifty Years... CONCRETE street in fine condition carrying 17 times original traffic

The concrete pavement on College Ave., has been a thrifty investment for Ft. Collins' citizens and will continue to give years of economical service. B. G. Coy, City Engineer, says, "Except for joint sealing there have been no maintenance expenditures on this pavement since it was built."

College Avenue, main street of Ft. Collins, Colorado, demonstrates the fact that concrete pavement has the strength and durability to carry traffic without interruption for many years at minimum cost.

Portland cement concrete pavement can be economically designed for any condition of load or service for urban expressways, business thoroughfares, residential streets or rural highways—and usually costs less to build than any other pavement of equal load-carrying capacity and costs less to maintain.

Send for free copy of new book, "Concrete Pavement Design," for roads and streets carrying all classes of traffic. Distributed only in United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. A4-4, 33 W. Grand Ave., Chicago 10, Illinois

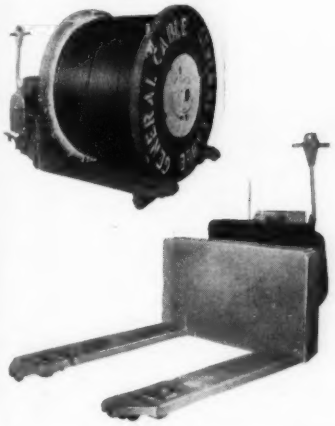
A national organization to improve and extend the uses of concrete
. . . through scientific research and engineering field work

Battery Pallet Truck Transports Reels

The Automatic Transportation Co., 149 West 87 St., Chicago 20, Ill., pioneer manufacturers of the Transporter battery-powered hand truck, has produced another innovation — the pallet truck, designed to handle reels or similar bulky cylindrical items.

The forks are engineered and widened to straddle the reel when in a lowered position and to lift it from the floor when raised.

The drive unit and operation are identical to those of the standard Transporter, the only modification being the forks. The unit was originally designed according to specifications of the General Cable Corp., 420 Lexington Ave., New York, N. Y. General Cable uses the truck to handle reels of finished cable in the manufacturing plant.



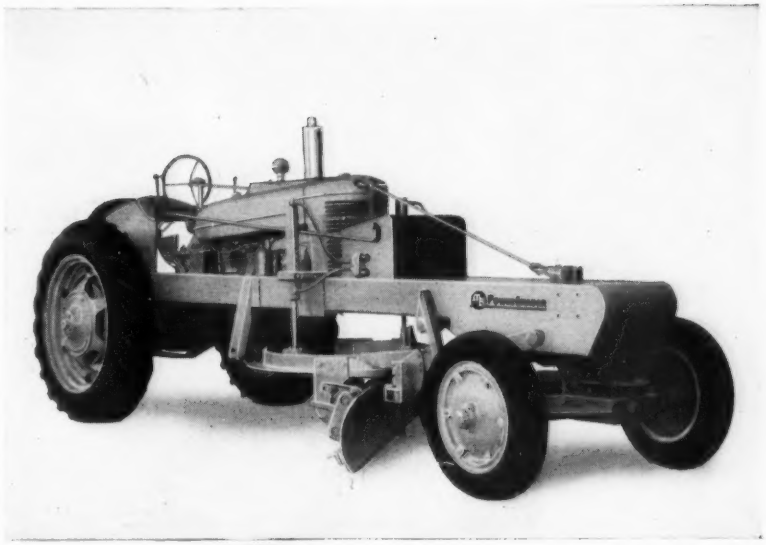
This pallet truck is used to handle reels 54 inches in diameter and 38 inches wide.

Hartman Appointed Ohio Representative

Edward W. Hartman has been appointed district representative for the Ohio area of the Clay Sewer Pipe Association, Inc., Columbus, Ohio.

Edward W. Hartman

Following his service as assistant engineer for the Ohio Highway Department and as construction engineer for Firestone Corp. in Liberia, Mr. Hartman served as draftsman for the Republic Steel Corp. as transportation consultant to the Mexican Government, and as senior engineer in Brazil for the Rubber Development Corp.



Now MB POWER GRADER

In the new M-B Power Grader, Meili-Blumberg Corporation, makers of construction and industrial equipment for the past twenty-five years, have combined many new features around International Power to give users low cost road and street maintenance and, with the full line of attachments, an all-year tool. Check these features:

1. Hydraulic power direct on moldboard gives maximum blade pressure.
2. Handles all types of maintenance fast — 2 to 16 miles per hour at low cost.
3. All blade and attachments controlled from operator's platform.
4. Worm gear center-post steering for ease of operation.
5. Big 12 x 38 low-pressure tires turn engine power into PUSH.
6. Powered by big 40 H.P. International Tractor.
7. Husky all-welded frame — resists twisting.
8. Balanced weight means easy steering, steady traction, with approximately 7500 pounds blade pressure.
9. Built rugged to do tough jobs.
10. Attachments for every job — scarifier, snow plow, bulldozer, leaning front wheels, all-weather cab.

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10 TIMES FASTER THAN HAND STRIPING . . . . .

Does slow, tedious hand striping make it impossible for you to keep up with today's traffic demands? Does it endanger your safety record? Then consider using M-B Street Markers. With an M-B Marker, one man stripes ten times as fast as the man marking by hand. The machine handles ALL types of striping . . . can also be used as an all-purpose paint sprayer. Requires no experience. Hand-propelled or self-propelled models.

Complete Markers for Industrial, Street and all Highway Marking jobs. Ask for Bulletin No. 121.

MB MEILI-BLUMBERG, CORP.

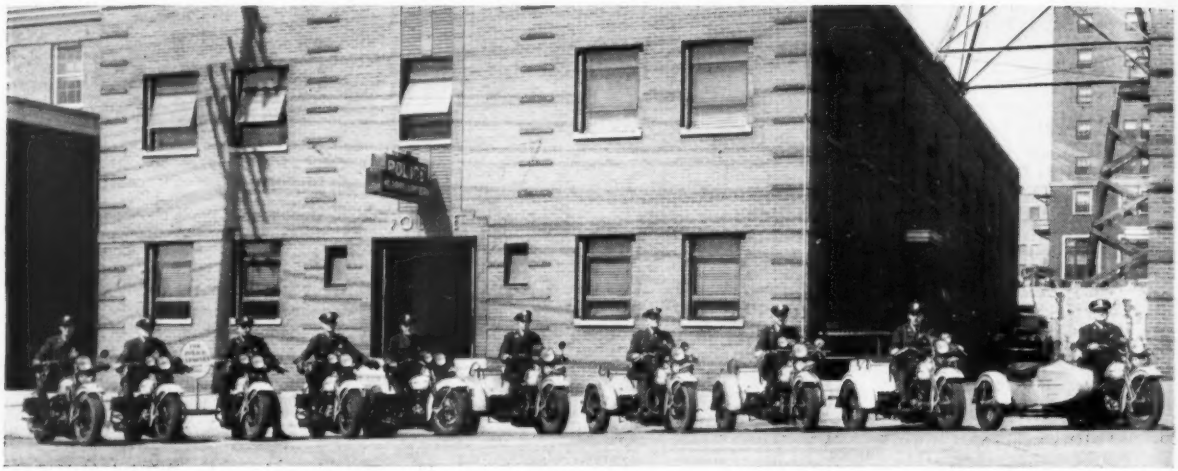
BOX A-4, NEW HOLSTEIN, WISCONSIN

XUM

Greenville, S. C., Police Use All Types of

HARLEY-DAVIDSON MOTORCYCLE EQUIPMENT

to Effectively Cope with Today's Increased Traffic Problems



The Greenville, S. C., Police Department can well be proud of this squad of Harley-Davidsons. Shown from left to right are Claude Garrison, W. N. McDougal, J. H. Stroud, A. C. Gossett, C. M. Harbin, G. A. Thrift, G. M. Freeman, C. S. Cox, P. D. Mackey, and P. P. Oakes—Traffic Lt. Note that the Harley-Davidson machines include solos, Servi-Cars and sidecars. The department has thirteen Harley-Davidsons, ten of which are shown here. Harley-Davidsons are used exclusively.

MOTOR vehicle registrations are increasing at a rapid rate. This, plus driver carelessness and continued use of over-age cars and trucks is bringing about a sharp rise in traffic hazards and problems. Consequently, this greater "accident potential" is a definite challenge to every community—large or small. Police departments throughout the country are doing a fine job of accident prevention with present equipment—but in many cases they do not have *enough* motorcycles.

To meet this situation, you can best utilize your manpower through the use of most modern traffic control techniques and more Harley-Davidson Police Motorcycles, Servi-Cars and sidecars. City after city and town after town has proved that no other method can match this motorcycle combination for solving traffic problems—and thus prevent many accidents and deaths. Call in your Harley-Davidson dealer today and get complete information about the dependable Harley-Davidsons.

HARLEY-DAVIDSON MOTOR COMPANY • Milwaukee 1, Wisconsin

HARLEY-DAVIDSON

Police Motorcycles

Onan Presents 10-hp Engine Weighing Only 97 Pounds

The CK engine weighs 97 pounds, has a performance and stamina record that is exceptional for its size.

The engineers of D. W. Onan & Sons, Inc., 43 Royalston Ave., Minneapolis, Minn., have proven that a heavy-duty, high-capacity engine can be compact and light in weight. The new Onan CK engine is a 10-hp, 4-cycle, air-cooled prime mover, weighing only 97 pounds.

Precision built, this engine has been undergoing severe field tests for over two years. One plant has an Onan electric engine which has a rated output of 5,000 watts, DC, yet, with steel guard, weighs only 258 pounds.

The engine was designed for the light-weight portability of the air-cooled type that would still give the performance and service characteristics of the water-cooled heavy-duty engine. To obtain this, it is built of aluminum, which has a 4.5 to 1 ratio of thermal conductivity advantage over cast iron. Longer cooling fins on the cylinders and cylinder heads allow more rapid heat dissipation. The axial flow fan delivers cool air at the rate of 600 cubic feet per minute at rated hp without absorbing an excessive amount of engine power. Mounting and operation of the engine at wide angles from the vertical is possible.

Joint Sealing Compound Available in Colors

Colored Para-Plastic can now be obtained to meet specialized water proofing and joint sealing requirements, according to an announcement by the Servicised Products Corp., 6051 West 65 St., Chicago 38, Ill. In addition to the black, the colors green, red, gray, cream, and yellow will be available.

This recent development is expected to result in many new uses for this rubberized seal, which conforms to federal specifications SS-F-336 and is used to seal expansion joints in all types of concrete construction.

Kirkwood Organizes New Consulting Firm

Arthur C. Kirkwood announces the formation of A. C. Kirkwood & Associates, Wirthman Bldg., Kansas City 3, Mo. Services offered by the new engineering firm include reports, appraisals, rate studies, and consultation, all fully complemented by engineering design services.

Arthur C. Kirkwood

Mr. Kirkwood, founder of the firm, has had broad experience in the field of consulting engineering.

For the past seventeen years, Mr. Kirkwood has been associated with the Burns & McDonnell Engineering Co.

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A high strength to weight ratio($\frac{S}{W}$) is not only good engineering but has special advantages in tunneling work. ARMCO Tunnel Liner Plates are designed for utmost strength with the least possible weight.

This means that one unskilled workman can carry, hold and bolt into place an Armco liner section. Only a structural wrench is needed. Labor costs are low and the job goes fast. Less bulk also means less excavation, and storage requirements are smaller. With ARMCO Plates you buy no excess metal, and this keeps job costs down.

You'll find ARMCO Liner Plates the simplest, most inexpensive way you ever saw to install conduits, sewers and similar structures. You avoid the hazards and inconvenience of open trenching and business above ground continues as usual. Use ARMCO Tunnel Liner Plates on that next job to "hole through" ahead of schedule and under the estimate. Write for data. Armco Drainage & Metal Products, Inc., 1195 Curtis St., Middletown, Ohio. Offices in Principal Cities.

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"FROM COTTON TO CUTTER"

UNIFORMS, utility and work clothes of Reeves Army Twill mean greater efficiency with added economy. The high tensile strength of this quality fabric assures rugged wearability. Its vat dyed colors are fast to sun, water and perspiration. Being Sanforized*, it retains its fit even after repeated washings. Remember—over 90 million yards of this same cotton fabric was used by America's fighting forces—exceeding Government specifications under the toughest combat conditions.

**Residual shrinkage less than 1%.*

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American Coach & Body Makes Managerial Appointments

The staff of The American Coach & Body Co., Cleveland, Ohio, has been augmented by the following sales appointments: Deming Bronson, sales manager of the central division; Homer A. Feyen, sales manager of the midwestern division; William R. Hall, sales manager of the eastern division.

Deming Bronson

Deming Bronson served as a consultant for the National Tube Co., Pittsburgh, Pa. He also served General Paint Corp., Cleveland, Ohio, a division of Hill, Hubbell & Co.

Homer A. Feyen

Homer A. Feyen joined The American Coach & Body Co. in 1946 as sales engineer, after four years in the Tank Automotive Division of U. S. Army Ordnance. Feyen has had diversified experience in the heating equipment field.

William R. Hall

William R. Hall has been active in several branches of the motor vehicle business. During the war, he was a senior industrial specialist on the WPB. Before coming with The American Coach & Body Co. in 1945, he had been associated with The Federal Motor Truck Co., Newark, N. J.; The Mack & Larrabee Truck Agency of Newburgh, N. Y., and as director of the Automotive Bureau of The Bordon Co.

Heats and Melts Rubberized Asphalt Compounds

To answer the problems that arrived with the new rubberized asphalt joint sealing compounds and the various governmental and state specifications covering their application as far as correct heating and melting are concerned, the Aeroil Products Co., 5705 Park Ave., West New York, N. J., has designed and produced a revolutionary piece of equipment—the Heet-Master Double Vat Kettle Model 120-DVP. Field tests conducted by several state and federal contractors have resulted in the endorsement by leading manufacturers of these new "rubber sealer" compounds because of their adaptability.

The new unit uses a double boiler heating principle to provide uniform thermostatically controlled indirect heating, thus differing greatly in principle from previous types of asphalt melting kettles. There are neither complex engines, pumps, nor other equipment necessitating skilled operators and constant maintenance. This results in an appreciable reduction of operating costs.

In order to maintain a constant and exact temperature, a new type of valve that was used during the war on army bombers has been adapted to permit the use of thermostatic controls. The manufacturers have been able, as a result, to provide automatic finger-tip temperature controls. In addition, this model possesses Aeroil's patented Heet-Master, which results in a uniform heat from within the melting compound.

Bulletin #310 gives full information and specifications and may be obtained by writing to the manufacturer.

● There are no tricky kinks of design in the Buffalo that are hard to understand or that make assembly difficult. No experts are needed to make a replacement or repair. There are fewer parts and they are all accessible.

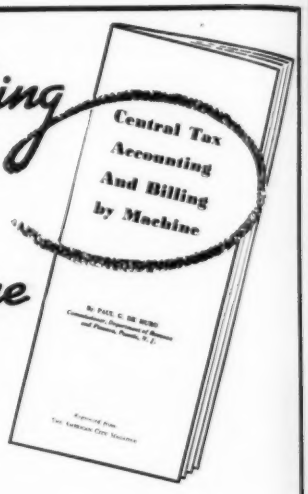
Fair metering is a matter of ethics and it's the neighborly thing to install meters so that small flows or large flows are recorded accurately. In a small community Buffalo made American or Niagara Water Meters are first choice.

Cities, too, find the simplicity and moderate cost of Buffalo Meters make them the best investment.

Write for information covering simple design, easy assembly and interchangeability of Buffalo Meter parts.

AMERICAN BRONZE CASE
NIAGARA GALV. IRON CASE
WATER METERS
BUFFALO METER COMPANY
2902 MAIN STREET • BUFFALO 14, NEW YORK
Simplicity

Central Tax Accounting and Billing by Machine



THE SUNDSTRAND TAX ACCOUNTING SYSTEM described in this booklet is designed to meet the requirements of municipalities in the State of New Jersey. Write for a copy and learn the many advantages of a Sundstrand Tax Billing and Municipal Accounting System.

SOME ADVANTAGES OF A SUNDSTRAND INSTALLATION

COMPLETENESS: Provision made for every type of entry.

CONVENIENCE: Small forms—originals. Arranged numerically for quick filing and refernce.

EFFICIENCY: With the Sundstrand Tax Billing Machine the work can be arranged so as to reduce peak loads and to take maximum advantage of available time.

PROOF: Complete mechanical proof of every phase of the work. Line proof of correct amounts; correct accounts; correct stencils; etc., etc.

SIMPLICITY: Sundstrand is easy to understand; easy to operate. Anyone can learn in a few minutes. You use your own personnel.

The Sundstrand Automatic Tax Billing Machine is extremely flexible. Future changes in the tax rates present no problem. The Sundstrand Automatic Tax Billing Machine can be easily changed to handle different rates.

An example of this flexibility is the direct application of the Sundstrand Automatic Tax Billng Machines to the tax billing procedures of various municipalities of the State of New Jersey. A recent instance of this application is at Passaic, New Jersey. The new system and the results are detailed by the city's Director of Finance in a convenient booklet that is easy to read and full of helpful information. Send for your copy today.

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P. A. System Brings Order Following Train Wreck

When the Southern Pacific's San Joaquin Daylight Limited hit a tank truck and was wrecked and burned, one of the immediate results was a crowd of spectators whose cars were backed as far as Fresno, twenty miles away. In an amazingly short time the situation was so completely out of hand that rescue work was impossible.

At the first flash of the news, Harry H. Billings, wholesale radio distributor of Fresno, rushed to the scene with a

Harry Billings, left, watches as police bring order out of chaos with the aid of a p. a. system

Newcomb Portable Sound System, which consists of a storage battery, amplifier and microphone, with a loudspeaker mounted outside. He gave the apparatus to the chief of police of Kingsburg, and within a few minutes the crowds had been cleared from the highway.

Later, the sound unit was placed in the middle of the highway, surrounded by flares, and a single officer took command of traffic direction. The Newcomb system carried his orders above the confusion to fellow-officers as far as a quarter of a mile away.

As a result of Harry Billing's efforts in connection with the wreck at Kingsburg, the equipping of California state highway patrol cars with Newcomb sound units has become a matter of state business and Sacramento officials are taking action.

The Newcomb 146-S Portable Sound System is manufactured by Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.

Yeomans Bros. Acquires Aero-Filter

Yeomans Brothers Co., Chicago, Ill., has acquired a license to promote and sell the Halverson-Smith Aero-Filter process of biological treatment using high-capacity trickling filters. More than one hundred plants have already been installed in the United States.

Aero-Filter plants are available in both single- and multi-stage design. Single-stage Aero-Filters are only 1/7 to 1/8 the size of standard filters, yet the company states that they give comparable performance in plant efficiency and at a greatly reduced over-all construction cost. Where an exceptionally high degree of treatment is required, the company asserts that the two-stage Aero-filter system gives reductions equal to the activated sludge process.

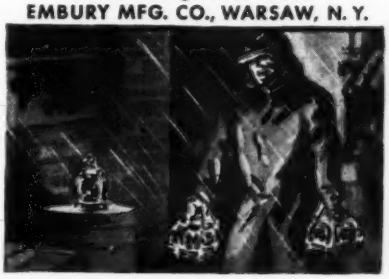
A unique feature of the Aero-Filter is the continuous raindrop form of application of settled sewage over the entire filter bed.

The Aero-Filter rounds out Yeomans' line of sewage treatment equipment to the extent that all equipment for most types of complete plants is available from them. In addition to the Aero-Filter, Yeomans offers screenings, scum and sludge-handling equipment, clarifiers, digesters, sewage pumps, pneumatic sewage ejectors, mechanical aerators, and standard-rate trickling filter distributors.

Schaefer Appointed Advertising Manager

Norman M. Schaefer has been appointed advertising manager of the Ohmer Corp., subsidiary of Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa.

Mr. Schaefer has been with Ohmer's since 1938, except for two years in the armed forces during the war. His experience with the company has included phases of the sales and promotion activities.



YEARS of SERVICE

This McDonald Diamond Line Corporation Stop without coupling is designed to give years and years of dependable service. The inlet end is threaded to fit Mueller Machine...outlet end threaded iron pipe, next size larger. This quality item is another in the long list now being produced in greater quantities at McDonald's. And McDonald's years of service in the manufacture of waterworks goods is the assurance that you're using the best when you specify the McDonald Diamond Line. Write for information.

EST. 1856
McDonald

A. Y. McDONALD MFG. CO.
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BRASS GOODS • PUMPS • OIL EQUIPMENT

Ford, Bacon & Davis Promote Executives

Everett S. Coldwell, vice president since 1941, and David A. Uebelacker, with the firm of Ford, Bacon & Davis, Inc., have been elected to the respective positions of executive vice president and vice president and director in charge of new business activities.

Everett S. Coldwell

Mr. Coldwell, educated at the Massachusetts Institute of Technology and Harvard University, joined the staff of Ford, Bacon & Davis, Inc., in 1926, after ten years of varied industrial engineering and manufacturing experience. He is a director of Ford, Bacon & Davis, Inc., and of Ford, Bacon & Davis Construction Corp.

David A. Uebelacker

Mr. Uebelacker is a graduate of Princeton and of Harvard Engineering School.

Wood & Preuit Establish New Firm

Alan Wood and Richard I. Preuit have formed a partnership with the establishment of the firm of Wood & Preuit, engineering equipment company. Their offices are located in Washington, D. C., at 1018 18 St., NW, and in Philadelphia, Pa., at 607 Hardt Bldg.

The firm has taken over the Philadelphia territory for Builders-Providence, Inc., and its affiliates, Proportioneers, Inc., and the Omega Machine Co. In addition, the firm handles Cleaver-Brooks Co.; Dracco Corp.; Darling Valve and Mfg. Co.; Coldwell-Wilcox; Heilman Boiler Works, Inc.; Hill Diesel Engine Co.; Fisher Research Laboratory, and Marlow Pumps.

Mr. Wood had been connected with Builders-Providence for over thirty-five years. Mr. Preuit received his indoctrination in the water works field in a chemical laboratory for the Water Department in the city of Norfolk, Va. He later became associated with Mr. Wood. They had been working together for five years in the organization of Luther and Wood before forming the present partnership.

Buffalo Meter Co. Appoints Boals

Walter G. Boals, former general manager of the Rogers Machine Works, Alfred, N. Y., now holds the position of factory superintendent of the Buffalo Meter Co., Buffalo, N. Y.

Mr. Boal's first aim will be to step up production schedules by utilizing the plant expansions of recent years to meet existing orders.

Walter G. Boals

Davy Compressor Co. Sales Manager

Floyd Jones has been named sales manager of the portable compressor division of the Davey Compressor Co., Kent, Ohio.

Floyd Jones

For the past two years, Mr. Jones has been Davey's northeastern district manager in charge of the New York, New England, and southeastern Canadian territories.

Fairbanks, Morse Names Los Angeles Manager

John A. Cuneo has just been named manager of the Los Angeles branch of Fairbanks, Morse and Co., Chicago 5, Ill., according to R. H. Morse, vice-president and general sales manager.

Mr. Cuneo joined Fairbanks, Morse & Co. in 1929 as a field engineer representing the Export Division. He later was manager of the company's Havana, Cuba, branch.

After his Havana assignment Mr. Cuneo was transferred to the Export Division in New York, then joined the ranks of the Scale Division in Chicago before becoming manager of the St. Louis Scale Department.

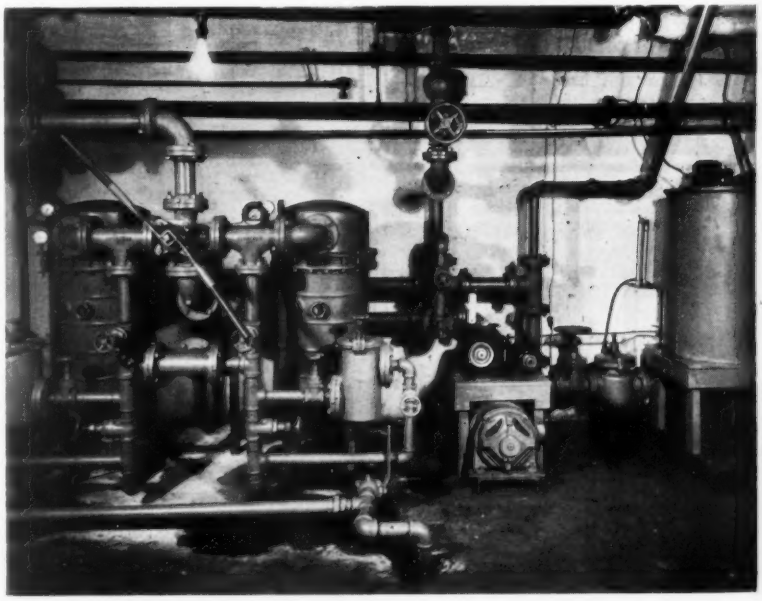
In recent years, he was assistant manager of the Export Division in New York.

Diatomaceous-Earth Water Filter

The new Pur-O-Cel filter takes the chemistry out of filtration and makes this process a mechanical procedure. Requiring no skilled operators, the filter utilizes thin mats of diatomaceous earth rather than a sand bed. The result is clear brilliant water from which all amoebic dysentery cysts and many bacteria have been removed.

The compactness and rapid filtration rate of the Pur-O-Cel make it highly practicable for small water treatment plants and swimming pools.

Backwashing of the filter for cleaning is accomplished without dissembling, and a comparatively small volume of water is required. For details, write for Bulletin 1550, %Proportioneers, Inc.%, 99 Godding St., Providence 1, R. I.



Proportioneers' new Pur-O-Cel automatic filter.

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William O'Dwyer, right, Mayor of the City of New York, presents to Trygve Lie, Secretary-General of the United Nations, the deed conveying the city property within the permanent headquarters site to the United Nations. The ceremony was held on a city playground located within the site area on Sunday, April 13. At the left is Colonel William Ray Hodgson, acting Australian representative on the United Nations' Trusteeship Council.

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